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SEPTEMBER 2007



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09

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contents

HANDS-ON WITH HARDWARE AND SOFTWARE

HARDWARE

SOFTWARE

TECHNOLOGY

GADGETS



LCD VS PLASMA

46 WE SETTLE THE QUESTION ONCE AND FOR ALL



technotes

Editorial	Editorial	6
Technotes	All the latest news	8
Feature	The Creators: Steve Wozniak	14



opinion

Opinion	Hasta la Vista	16
Opinion	Linux Window	18
Opinion	End User	20



feedback

Watchdog	Customer service issues	22
Epinions	Readers' letters	24



apc labs

Labs intro	Having a go	29
Reviews	Dell Inspiron 1720	30
	LG A1 Express Dual;	31
	Acer iDea 510	
	EVGA 650i Ultra;	32
	ASUS P5K3 Deluxe	
	Inno3D 8600GTS Xstriker3	33
	Wacom Bamboo;	34
	Dell 1320c	
	Brother HL-5270DN;	35
	HP OfficeJet Pro K5400dtn	
	Motorola KRZR K3;	36
	HTC Touch	
	OQO model O2	37
	Archos 704 Wi-Fi 80GB	38
	Canon HV20;	40
	Samsung CLX-2160	
	VMware Workstation 6	42
	Starry Night 6	43
	Miro 0.98;	44
	Pidgin 2.0.2	
Challenge	LCD vs plasma	46
Roundup	Printing digital photos	60
Best Tech	All the top products	66



72 | HARDWARE ACCELERATION

James Morris explains how you can dramatically improve your existing machine's performance.



regular features

How it's done	Double data rate 3	78
OS Challenge	Speed tweaks	80
Exploding Tech	Canon imageCLASS MF4150	82



ask apc

Tech help	Ask APC	84
-----------	---------	----



broadband

Internet	Broadband news and directory	93
----------	------------------------------	----



masterclass

Servers	Building a server network for small business	96
---------	--	----



workshops

Vista	Top tweaks: make Vista work	101
Office	Create macros to mail	104
Linux	Get better MP3 and DVD playback	106
Windows	Manage your photos	110



downtime

Gear	Test Tube Aliens; Napoleon Dynamite	112
	Pen; Sanyo CP29YS2; Corsair Survivor	
	USB 2.0 Drive; Sony VAIO VGF-WA1;	
	Parasound NewClassic D 200; Belkin	
	TuneTalk Stereo; iAXE393 USB-Guitar	
Games	Shadowrun; The Darkness;	114
	Mercury Meltdown Revolution	
Chip Chat	The lighter side of IT news	116



on the dvd

BONUS SOFTWARE FOR APC READERS

SOFTWARE

SECURITY

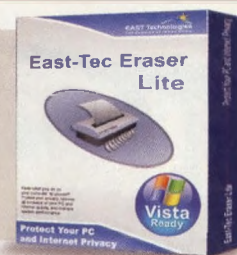
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ADVERTISERS' INDEX

Adobe	7
Altech	118, 119
Anywhere	120, 121
APCC	5
ARC	129
Linksys	15, 131
Compro	53
Corporate Software	124, 125
Diskmax	130
Dubai Financial Services Authority	75
Enspire	2
Epson	62, 63, 132
Eureka	89
Fluke	33
Foxconn	19
Gigabyte	28
Hosting Shop	129
JVC	27
Manacom	41
Microgram	127
Multipli	130
National Communications	126
Omnimount	51
Palit	39
Payam data	117
Pioneer	10
Samsung	17
Servers Australia	128
TEG	122, 123
Telstra	58, 59
TPG	45

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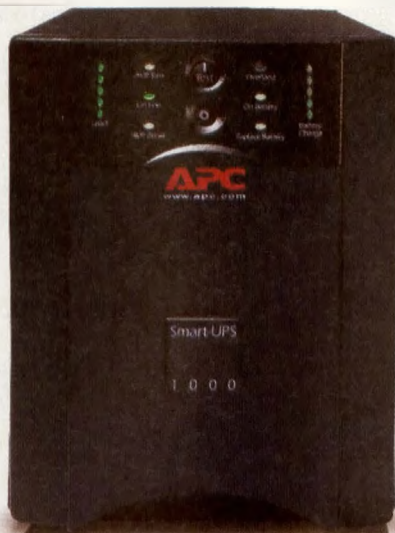
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editorial



TONY SARNO

I'm thrilled to welcome Jarrod Spiga back to the pages of APC. Jarrod was the Workshops Editor of APC a few years ago, but is now an infrastructure architect and engineer as well as a technical consultant for a number of small businesses. We've snared him back to take our new Masterclass extended tutorial, 'Building a server network for a small business'. Best described as a 'young veteran', Jarrod has built the IT systems for countless small businesses, so his Masterclass is borne out of real-life experience and a pragmatic view of what the Microsoft and Linux paths each have to offer.

If you need to manage the back end of your business but aren't professionally trained in IT, our Masterclass over the next 12 months will certainly point you in the right direction. And if you've read one of the Masterclasses and wish to ask Jarrod questions, we're happy to have Jarrod consider them. This is part of our increased focus on helping you solve your technical problems, following our launch of the Ask APC technical help section last month.

Our cover story this month is on high-definition televisions. TV is not a topic that APC would traditionally have covered even six months ago, but the merger of IT and AV is gathering pace. Many of you are building home theatres or setting up video streaming

at home, combining PCs, network media players and even NAS devices. But here is the interesting bit: in your feedback to the magazine, many of you have told us you want to watch your videos on big TVs — *not* on computer monitors.

So, now is an opportune time for APC to tackle the big question of what's better: plasma or LCD? That's the first question asked by anyone about to plonk down a few thousand on a big HDTV. By contrast, the Blu-ray vs HD DVD battle will probably matter only when everyone starts taking the next step: buying a high-definition player. But that's exciting for us too, because it brings even more IT into the lounge room.

When Labs Editor Nick Race first spotted the just-released Toshiba HD DVD player that we've used in this month's cover story, he went over to have a look at it. He stood observing it for a while, as if puzzled by it. He picked it up to test its weight, ran his hands around it and then pointed out that one of the player's sidewalls was actually a heat sink. "I know a PC when I see one," he said triumphantly. And he was right — the Toshiba HD DVD player is actually powered by a Pentium 4 processor! See, the PC really is moving into the lounge room!

tsarno@acpmagazines.com.au



NOW IS AN OPPORTUNE TIME FOR APC TO TACKLE THE BIG QUESTION OF WHAT'S BETTER: PLASMA OR LCD?

SEPTEMBER AWARDS



We reserve the Editor's Choice award for the very best products available on the market.



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p33



p43



p42



p34



p36



p34



p36



p36



p34



p34

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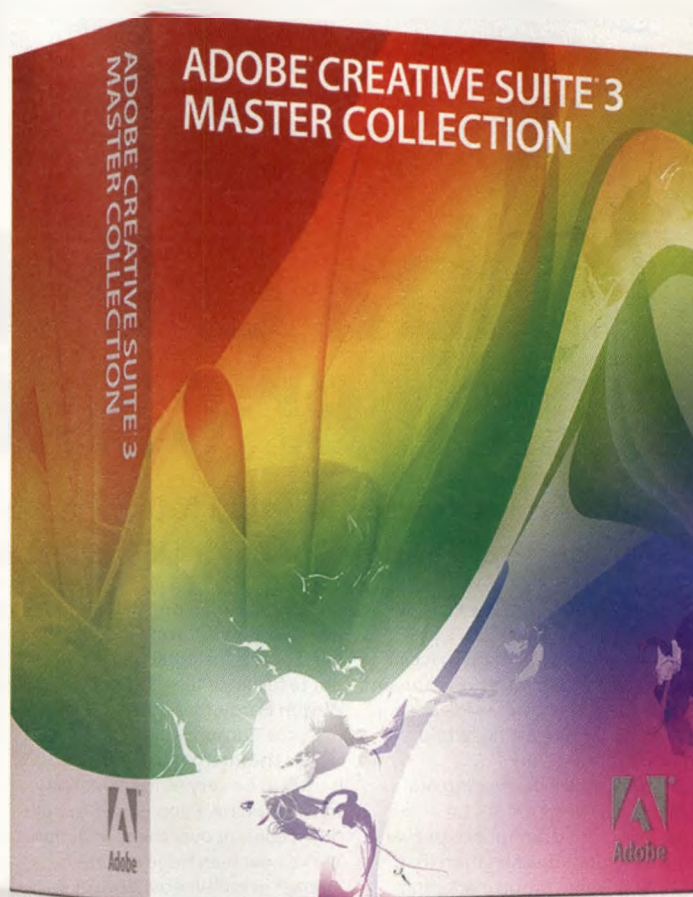


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With the two big telcos talking of speed increases, the consumer is sure to win.

Telstra & Optus consider cable speed boost

Don't assume fibre's our only future: both Optus and Telstra are working on upgrades to the speed of their HFC cable networks. *Dan Warne reports.*

Optus has confirmed it is evaluating DOCSIS 3.0 — a cable internet standard that can run at up to 160Mbit/s downstream and 120Mbit/s upstream — as an upgrade for its existing hybrid fibre/cable network.

"We're still investigating our deployment on DOCSIS 3.0 — we have nothing to announce but we are absolutely investigating that," Michael Smith, group marketing director for Optus Consumer, told journalists at the launch of the Optus 'Fusion' plans, which combine line rental, ADSL2+ or cable broadband, and unlimited calls to landlines nationwide and Optus GSM/3G mobiles.

Smith was responding to questions about the need for greater upstream bandwidth on the Optus cable network, which is still pegged at 256Kbit/s, and increasingly becoming a bottleneck for customers who want to upload videos to YouTube, do video chat and share files over P2P networks.

"Upload is becoming increasingly important in the mind of the customer and we've got to facilitate that," agreed Warren Hardy, managing director of Optus Consumer.

"As the internet has evolved, it used to be very much a one-way traffic exercise. People used to pull down content over the connection. We've now seen huge growth in interest in multimedia devices — so customers are creating and distributing their own content, so now it's becoming much more of a two-way street."

A Telstra source said the telco was not yet looking at rolling out DOCSIS 3.0 on the BigPond Cable network, as it is a young standard with no modems commercially available yet (the DOCSIS 3.0 standard was only finalised in August 2006).

However, BigPond will instead upgrade to what some vendors call 'pre-3.0 DOCSIS', 'channel-bonded DOCSIS' or simply 'DOCSIS 2.0b'

(though the latter label is frowned upon since the standardisation of channel-bonded DOCSIS has been abandoned by standards bodies in favour of encouraging the finalisation of the official DOCSIS 3.0 standard, which also includes channel-bonding technology).

Under this system, each customer will use up to three individual cable internet connections (over one cable) bonded together for a maximum 100Mbit/s downstream. The head-end equipment and customer modem would effectively have multiple modem circuits in one box for each customer. The most popular cable modem chip that can do this is from Broadcom — the BCM3255 (the PDF specifications for this chip make for interesting reading).

It's important to note, though, that channel-bonded DOCSIS 2.0 only increases the downstream bandwidth — it doesn't do anything to increase upstream, which remains limited to around

10Mbit/s (this is the case on Telstra's current cable network, but because of the number of customers sharing the upstream bandwidth, Telstra limits the per-customer upstream to 256Kbit/s).

The channel-bonded arrangement is likely to be made possible by the fact that Foxtel recently shut down its analogue TV channels on Telstra's HFC cable, freeing up an enormous amount of bandwidth on the cable.

Although American cable networks have shunned channel-bonded DOCSIS 2.0b in favour of implementing the proper DOCSIS 3.0, several networks around the world have successfully rolled it out, including StarHub in Singapore. (StarHub markets the service as DOCSIS 3.0, but it's really pre-3.0, with the promise of a future upgrade to true 3.0.) StarHub is using the Motorola SB6100 modems, which seems like the most likely candidate for Telstra's network upgrade.



MICROSOFT'S

DIY HOME SERVER

With Windows Home Server due next month, Microsoft reveals to David Flynn how enthusiasts may have a back door to build their own system.

After two years hidden away in Microsoft's skunkworks, and barely six months in the spotlight since breaking cover at this year's Consumer Electronics Show, Windows Home Server is on the way. The final code was signed off and the master disc DVD 'went gold' in July. "We're now in the process of delivering the final code to our OEM and software partners so they can continue building and finalise their products," Joel Sider, senior program manager for Windows Home Server, told APC Magazine.

The first wave of ready-made Windows Home Server systems will include models from HP, Gateway, LaCie, Iomega, Fujitsu Siemens and Medion. HP's MediaSmart will likely be first out of the gate, with a starting price around US\$599 (which probably means around the AU\$800 mark once it arrives here).

The MediaSmart can house up to four front-loaded SATA drives (although the capacity of the base model hasn't been revealed) with USB 2.0 interconnects for four more

external drives. These can also be used for sharing devices such as a printer. HP says the black bookend-sized box will be powered by AMD's 64-bit 1.8GHz Sempron 3400+ 'Manila' processor designed for use in small form factor PCs.

Microsoft has also been encouraging developers to produce server-resident software, both in the form of standalone programs as well as 'add-ins' that plug into the Windows Home Server console. Our favourites? A µTorrent client (such a shame to waste that always-on broadband connection...!) and Photosync, which automatically copies snaps from the server's Photos folder onto your Flickr page.

Windows Home Server OS won't be sold directly to consumers as boxed software *a la* Windows Vista. Microsoft will be making it available through what it calls the

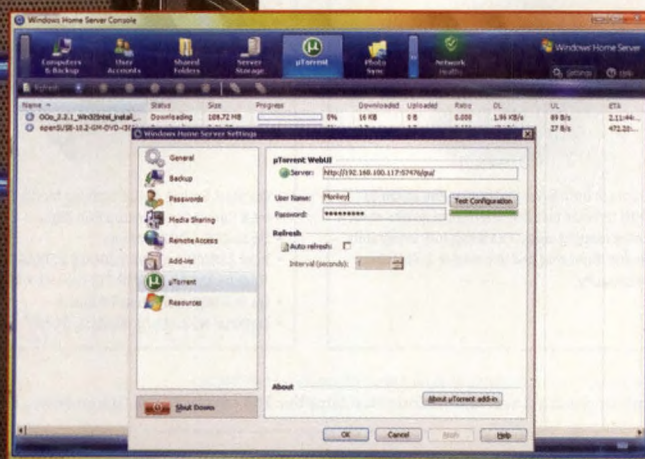
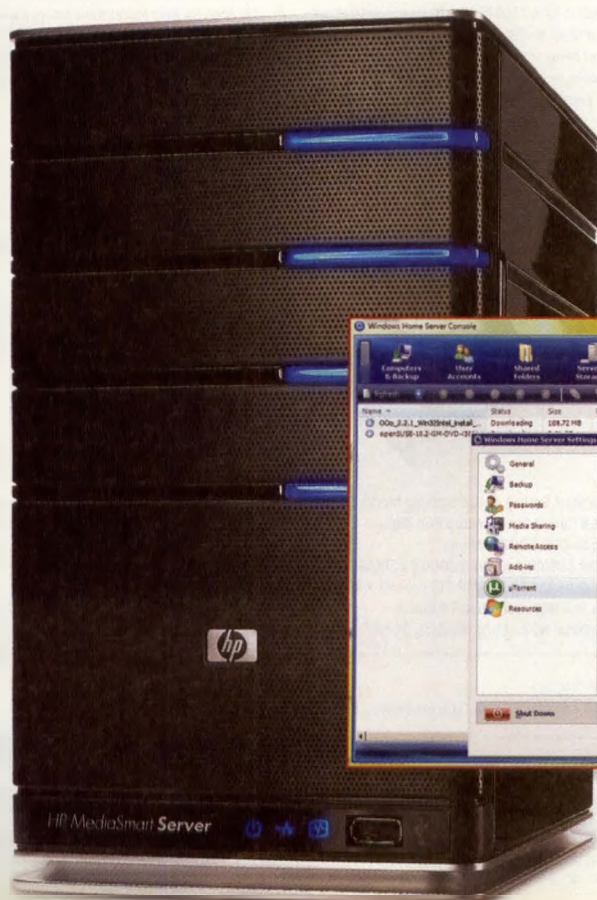
'system builder' channel. Unlike retail brand names such as HP, who 'target broader consumer audiences', Sider explains that system builders "tend to build and sell more targeted, lower volume solutions, perhaps for specific markets."

System builders have long provided enthusiasts with a back door to obtaining OEM-only operating systems, as was the case with the Media Center Edition of Windows XP and, long before that, the widely sought-after OEM Service Release or OSR editions of Windows 95, which introduced support for US and the FAT32 file system.

When savvy customers bought a single piece of hardware that could be used to build a PC, many system builders obliged by supplying the OS included. The products were typically hard drives or motherboards, but some stores have been happy to bundle the OS with something as modest as a mouse.

"Enthusiasts and hobbyists have been known to acquire system builder versions of Media Center and other products through this channel in conjunction with a purchase of various types of hardware," Sider admits. When we asked whether users will be able to buy a single hardware component (like a hard drive or case) and get the WHS on disc, as was the case with OEM editions of Windows XP, Sider gave a coy smile: "The scenario you outline is possible and could very well happen."

◀ HP's MediaSmart server is one of the new Windows Home Servers to hit the market.



◀ A µTorrent client makes good use of your always-on broadband.

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DirectX 11 by 2009

New multimedia API imminent, with new OS to follow?

DirectX 10 may not get the chance to reach maturity, according to an anonymous source within a major graphics card company. Microsoft could have plans to release the next iteration in less than two years. "I don't think that MS has made any official pronouncements on this," said our source, "[but] for me it's clear that they are targeting early 2009 (or at worst mid-2009)."

DirectX 9 was initially released at the end of 2002, followed by a five-year wait for DX10. Although successive versions are developed concurrently by different teams,

the short development cycle suggests one of two things: either Microsoft is out to correct the mistakes it made with DX10, or Vista successor Vienna really is on the way — and soon.

DirectX10 has been criticised heavily by many users because it adds a huge performance hit with little visible benefit; games such as Company of Heroes, played on a top-of-the-line DX10 card, drop from over 100fps under DX9 to 30fps. Recent patches have corrected some of the graphical glitches that users have been experiencing, but frame rates are

still well below DX9 levels.

If DX11 and Vienna are really this close, Microsoft may have little incentive to iron out the kinks in its current end-user experience. The release of a Vista Service Pack is yet to be announced, but, while we certainly expect something to be unveiled sooner rather than later, it may not be the fix-all expected.

Meanwhile, Microsoft is still struggling to support Windows 2000 and XP, so another major architecture change is unlikely. Vienna could just be an advanced service pack, introducing long-awaited features like WinFS.



Jungle shooter Crysis — due early next year — may get little chance to show off DX10's grunt before DX11 rolls out.



WIRELESS WOES

It's more than six months after the launch of Vista, so you'd think the software compatibility issues would be sorted, wouldn't you? Not so fast.

According to our recent report by Ian Grayson on APCmag.com, some customers of Telstra's Next G wireless broadband are discovering that not all is well under the new OS.

As Ian discovered himself after buying a brand-new Next G Turbo Modem data card, there was a problem with the 'connect' function. Some investigating revealed an ominous fact — apparently the software supplied with the modem isn't Vista-ready. Uh oh.

A Telstra spokesperson also confirmed Vista problems for some satellite users.

It's not the only example of Vista compatibility issues — check this month's Watchdog column (page 22) for another example involving Netgear.

If only upgrading were simpler.



Want to nominate a dumbest moment in tech?

Send an email with the subject line "Dumbest Moments" to dwarne@apcmagazines.com.au. All correspondence becomes the property of APC.

By the numbers: iPhone hysteria

Apple has a new cash-cow in its product paddock, making the farmer a very rich man indeed.

When it hit the shelves, 500,000 iPhones were sold in the first week, and it's expected 4.5 million will be bought this year. By 2011, this is likely to increase seven-fold to 30 million. It costs Apple \$230 to make a 4GB phone and \$265 to build an 8GB unit. Add to this \$16 for the software on each and Apple lays out a total of \$246 and \$281 respectively per

phone. It's believed Apple makes a 50.7 per cent profit when it sells a 4GB model for \$499, and 53.1 per cent on a \$599 8GB handset. Apple shares have jumped by 43 per cent since the phones official announcement in January. This translates Apple's total value jumping by around \$32 billion dollars. A successful product — but it was still hacked in under two weeks.





Longhorn Reloaded REVOKED!

Microsoft closes fan project that dared to dream of realising original Longhorn.

The Windows Vista we got in 2006 wasn't the Windows Longhorn we were promised in 2003. Key features, like the database-driven WinFS file system never made it out the door. Microsoft's Longhorn reset threw away much of the early OS work, building Vista on top of the Windows Server 2003 kernel. That left several expired preview builds orphaned, offering a tempting vision of an OS that never would be — too tempting a prospect for a group of Longhorn fans to ignore.

Last October, nearly three years after Microsoft publicly unveiled its Longhorn vision at its 2003 Professional Developers Conference, a message on the JoeJoe.org bulletin board suggested using one of those expired builds as the basis for a community developed Longhorn OS. Working with build 4074, released for the 2004 WinHEC, they planned to make it more stable and deliver it with an installer that would let it run alongside existing operating systems. The name for the project, Longhorn Reloaded, was a reference to a pre-Vista Windows marketing program that was thought to have also been the codename for an unreleased version of Windows XP.

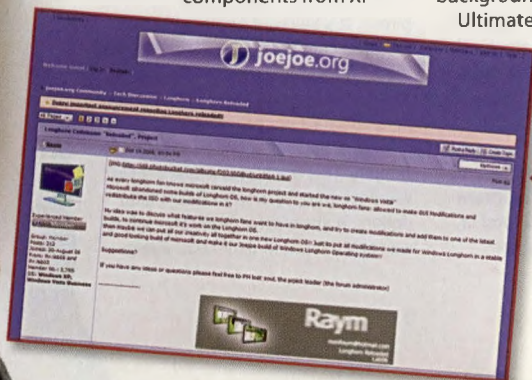
One part of the plan was to replace IE with a Longhorn-skinned version of Mozilla's Gecko browser engine. As the JoeJoe.org team was mixing Longhorn with new applications and updated components from XP

SP2, as well as custom skins, patches and new drivers, this meant that Longhorn Reloaded was more like a service pack release for Microsoft's alpha code than a complete Longhorn OS.

The project was at best a long shot, as it had no source code and, more importantly, no legal ground to stand on. Microsoft owned the code that they were working on, and it was always going to keep it close to its chest. The early stages of the project could stay below Microsoft's radar, but once an initial release was made available through BitTorrent — and discussed by many influential gadget and technology blogs — the lawyers couldn't ignore it. The Longhorn Reloaded project was smartly closed down, and the project's web site has disappeared from the web, along with their code.

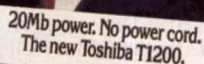
Longhorn Reloaded wasn't the only project trying to recreate the original vision. More promising — and more likely to avoid legal issues — is the Vista skinning and tuning pack Retrophase, being developed by the AeroXP.org bulletin board. Even Microsoft hasn't completely given up on some of the features that the Longhorn Reloaded team were trying to create, while Vista's desktop search tools fulfil many of the requirements of WinFS. The project isn't completely dead, and may be in Vienna, but also looks set to return as a part of a future SQL Server release. Other Longhorn UI features like animated desktop backgrounds are part of the Vista Ultimate Extras program.

The red pill or the blue pill? Seems as though Bill thinks "no pill" is best for community developers.



Mighty oaks from little forum posts grow — until the legal lumberjack comes along.

September 1987



TOSHIBA T1200.

How much more money will you have to do with the new Toshiba T1200. It's a portable, rechargeable PC/dedicated battery pack, 20 megabytes of RAM, 800K floppy disk drive, 40K hard disk drive and one megabyte random access memory. It offers real portability and real power.

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"With its removable, rechargeable NiCad battery pack, 20 megabyte hard disk drive, 720 kilobyte 3.5in diskette drive and one megabyte random access memory, it offers real portability, and real power."

"Microsoft is going to have to scramble to get Windows 2.0 out by its scheduled ship date and to make it compatible with the current version of Windows 1.04.

The Window 2.0 code, currently being beta-tested by many Windows-software developers, will not run major Windows applications, such as the PageMaker desktop publisher from Aldus Corp."

Reader letter to APC: "The new, cheap PC-compatibles have produced lots of new users who know nothing of computing and are able to jump direct to the very high-level interpretive languages of, say, WordPerfect, Lotus 1-2-3 or GEM Basic. . . Soon, the user interface programmer will become more important than the researching, register-juggling and generally innovative in-house subroutine/utility programmer."

The logo for Google offline apps. It features the word "Google" in its signature multi-colored font (blue, red, yellow, blue, green, red). Below "Google", the words "offline" and "apps" are written in a dark red, sans-serif font. The word "offline" is positioned under the "Go" and "o" of Google, and "apps" is under the "gle". A small trademark symbol (TM) is located to the upper right of the word "Google". The entire logo is set against a light gray background with a subtle grid pattern.

Will Gears give Google desktop domination?

The day our planet is renamed Google Earth draws ever closer. Following May's announcement that Google is currently buying a web business every week, it showed off its latest step towards world domination, Google Gears. Gears adds a crucial new feature to online applications: offline access.

Google's browser-based apps fail when you're not connected. Enter Google Gears, a cross-platform browser extension that allows developers to take their AJAX applications offline. As Linus Upson, Google Gears' director of engineering explains, lack of offline access "is the most common complaint consumers have when people use the applications Google offers... what Gears is, first and

foremost, is our attempt to address this limitation of web applications."

Gears is a JavaScript API with three components: a local server that handles the application itself, a database to store the application data, and what Google calls a 'Worker Thread Pool' that performs operations in the background to keep applications running smoothly. It's already available for OS X, Windows and Linux, and it supports IE and Firefox browsers, with Safari and Opera support coming soon. Google Reader is the first application to benefit from this, and vice-president of engineering, Jeff Huber, has already dropped big hints that Google Mail and Google Calendar will be next.

Google has made the platform available to the open source

Planet Earth, or Planet Google Earth? You be the judge...

community, and, on the official Gears blog, engineers Aaron Boodman and Erik Arvidsson note that "we are working with Adobe, Mozilla and Opera and other industry partners to make it the right solution for everyone." Gears is bad news for Microsoft on three key fronts. It has the support of Microsoft rivals and the open source community; it could allow Google's low-cost applications to compete on the desktop with Microsoft's cash cows; and Gears could well steal Silverlight's thunder. While version 1.1 of Silverlight is in early alpha with no sign of a release date, the release of Gears is expected in July.

New formats promise wireless hi-def video.

While Wi-Fi gets faster and more reliable, it still doesn't deliver the necessary bandwidth for true high-definition video streaming – which is where WirelessHD comes in. WirelessHD has been designed for HD video transmission, and according to chipset firm SiBeam, the technology spec will be published in a matter of weeks.

SiBeam, a member of the WirelessHD forum, has demonstrated a system streaming 1080p resolution video wirelessly over a 10-metre distance. In addition to reducing

cable clutter, WirelessHD offers Bluetooth-style device discovery.

WirelessHD isn't necessarily destined for your living room, it's one of several rival approaches. A number of firms are delivering HD video via Ultra-Wideband (UWB), which is an accepted wireless standard. Firms such as ZeroWire have developed systems that deliver UWB not just wirelessly but via coaxial cables too. That could be important, because UWB and Wireless HD are short-range technologies and most homes will need to use cabling too. The WiMedia

Alliance, the group in charge of UWB, is considering whether it should draft a standard for UWB over coaxial cables or let companies come up with their own solutions — and another body, MoCA (Multimedia over Coax Alliance) has its own set of standards for delivering multimedia via coaxial cables.

The result of all these different approaches, inevitably, is confusion. On paper, WirelessHD looks like the best bet. Unlike UWB, video sent via WirelessHD isn't compressed, so there's no loss of quality – but as we've seen before, the best format isn't always the successful one.

Wireless HD

Is this the logo that will soon appear on entertainment kits?



Apple CO-FOUNDER Steve Wozniak

Thirty years on, the engineer of the first personal computer exclusively shares with *Chris Bidmead* his ideas about that ongoing revolution.

By any standards, Steven Gary Wozniak is an extraordinary human being. An all-embracing obsession with computers in his early years (he was designing computers on paper while still at high school) made him a millionaire by the age of 30. But rather than immerse himself in the computer industry, Wozniak used the lion's share of his new-found fortune outside the world of

geekdom, investing his time and money in ventures like rock festivals and a children's science museum. To industry insiders, Woz is the Renaissance Geek, soldering iron in one hand, the other stretched out to embrace anything and everything that is intelligent, useful, or just fun.

APC: That first Apple revolution got going with just you and Steve Jobs. Do you think that

today there are another couple of guys in a garage somewhere who are going to turn the world around?

Steve Wozniak: People will always be trying to make things. But, yes, it's harder and harder now, all the electronics is embedded in chips, and you have to have huge resources to design them and lay them out. There isn't much room for the guy in the garage. But, look, you can now buy a microprocessor, add a few wires and make a neat little gadget. Good Lord, I have a watch that tells the time on Nixie Tubes [the cute little neon display valves used in early calculators before the arrival of the LED]. So, yes, there's space for people in the garage, and they'll have fun. But the chances their project will take over the world aren't too great. The big companies control everything, with so much money, that even if you were a couple of guys in a garage you'd probably get bought out really quickly. Absorbed by Microsoft, or Cisco, or Apple or someone.

APC: Your Apple II famously funded the whole of the Mac development cycle. But you've really been

somewhat out of the main Apple loop since the Mac, so let's put this to you: the iPod is great, but hardly a rerun of the computer revolution.

SW: Back in the Apple II days, everything that happened was revolutionary. The whole world changed month by month by month back then. Right now, it's really hard to change things so much. But with the iPod, the world was waiting for a music device, and here came one that was just the right shape, just the right user interface. So I think the iPod was a revolution. Not so much technically, but from a marketing point of view. In economic terms, the iPod was really the second Apple revolution after the Apple II. It set the economic structure up, so every iPod from then on would have a lot of money behind it to keep it going.

APC: Back in the 1970s when it all started, you were famous for figuring out ingenious ways of minimising the chip count. You found ways of getting the chips you already had onboard to perform tricks that other engineers hadn't thought of. Do those Zen-like skills count for much any more?

PROFILE

On Sunday, 29 June 1975, Steve Wozniak completed a modest engineering project that would change the world. For a few hundred dollars he had designed the first truly affordable personal computer.

He knew it needed more than he had engineered into it, and made the design

decision to leave it open for others to build on. In various forms that machine – the Apple II – over the next decade became a billion-dollar industry, funding the development of all Apple Computer's subsequent products. Wozniak's classic design remained a challenge to competitors, until the line was closed down in October 1993.





▲ The revolutionary Apple II machine was responsible for the entire funding of the Mac development cycle.

▶ Steve Wozniak's enthusiasm and innovation has earned him celebrity status.



SW: In electronics, in a way, it's gone. But there are still people that love to live their lives that way. And those are my favourite people — they're so careful to get this one thing done so much more efficiently than anyone else would have thought of. Occasionally, I see such a thing. I was at an invention contest, and I saw a very clever way that a guy had a DC-to-AC inverter that worked by a whole different technique. Very few parts, and I was so admiring of it. Not that it had any application... But there are a lot of other categories besides electronics. In robotics today you can buy low-cost motors and controls and then put them together with chips.

APC: So, a bit like the Apple II predecessor, the Apple I, which you sold as a DIY motherboard?

SW: Right. Robot circuitry is just about up to the point where the world's ready for a new hot board. They already have kits in Japan for a few thousand dollars — like an erector set with metal parts and different motors you can build up and program. That's the line I'm

thinking along, but more like robot kits that come complete enough with things like hands with built-in sensors.

APC: And that was very much your mindset back then, wasn't it? That you were putting the Apple II together without trying to second-guess what people were actually going to use it for?



THERE ARE STILL PEOPLE THAT LIVE THEIR LIVES THAT WAY — WHO GET ONE THING DONE MORE EFFICIENTLY THAN ANYONE ELSE

SW: Yeah. We made some guesses about normal things in the home, and we were basically wrong. We didn't really know what was going to fly and what wasn't. VisiCalc was the first one. All of a sudden, with VisiCalc you could do so much financial planning and see your whole business and actually how it was going to work out.

APC: You're a huge Segway fan, I believe. But they haven't exactly taken off in the US, have they?

SW: No, they haven't. And when you first take a look at it you do kind of have to sneer. I had to have one for quite a while before I was convinced — even though I was using it a lot — until, all of a sudden, it's like when I pop out my door I realised that I don't have to get into a big old car, mess around opening garage doors, putting on seat belts and all that...

I can just hop on my Segway, out the front door, down a hill and then I'm in town. I go to a movie theatre, I go to the restaurant, I buy some stuff in a bag, and I scoot back up the hill. And I carry it in my car. I can park a mile away from events and Segway over.

APC: And you're still innovating. Along with ex-Apple CEO Gil Amelio you've recently set up a technology investment company called Aquicor. What's happening with that?

SW: We acquired Jazz Semiconductor, a chip maker, and we changed our name to Jazz Technologies.

We're really something of an acquisition company and this is like our first acquisition. Jazz is a chip fab, and in a certain category of chip we view ourselves as number one in the world.

APC: Jazz makes and designs chips for third parties, but can we expect new Woz-type products soon?

SW: I have some background way back in chip design. But the first thing is... Gil is very operationally minded, and it's basically getting control of things and getting all the costs in the right place first. So, new development is definitely something that you could expect us to be talking about in the very near future. **ETC**

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Home and away

Finally there's a clear distinction between Windows for home and Windows for work — but how are they faring so far?

Windows XP was the first version of Windows to make a distinction between home and business users. However, XP Home was rather limited in its capabilities, so many home users ended up running the Professional version.

Windows Vista has made the distinction much clearer, with Home Basic, Home Premium and Ultimate for home users, and Business, Enterprise and Ultimate for business users. This is a clear demonstration of specific products being used to target specific markets, and now we can genuinely talk about Windows for home and Windows for business, and there are real and practical differences between the two. So how are they shaping up so far?

VISTA @ HOME

The Home Basic and Premium builds are the most popular at home so far. This is partly due to the prohibitive cost of Vista Ultimate, but also because, unless you're running a home business that requires the combination of personal and business applications and support, Vista Ultimate doesn't offer that much more to the home user.

The move to Vista for home users hasn't been the easiest of transitions. Many customers purchasing OEM systems found



THERE'S NOTHING MORE FRUSTRATING THAN AN OPERATING SYSTEM THAT DOESN'T APPEAR TO SUPPORT YOUR HARDWARE PROPERLY

that they could no longer purchase Windows XP and were forced to upgrade. Resellers don't tend to care too much about customers' pre-existing software and hardware, so all the good work Microsoft did in creating tools to help people upgrade easily to Vista was rendered irrelevant.

Due to the general lack of third-party driver support in Vista's early days, it's quite probable that popular impressions were tainted. There's nothing more frustrating than an operating system that doesn't appear to support your hardware properly or offer you at least the same level of functionality as you previously enjoyed. That's something I go through every time I install Linux.

But the best aspects of Vista for home users have yet to be seen, I think. Once vendors get their support issues ironed out, allowing Vista to run more reliably, and

gadgets utilising Vista-only features like SideShow start becoming more popular, then I think Vista will come into its own as a great OS for home users. Right now though, it's something more to be tolerated than enjoyed.

VISTA @ WORK

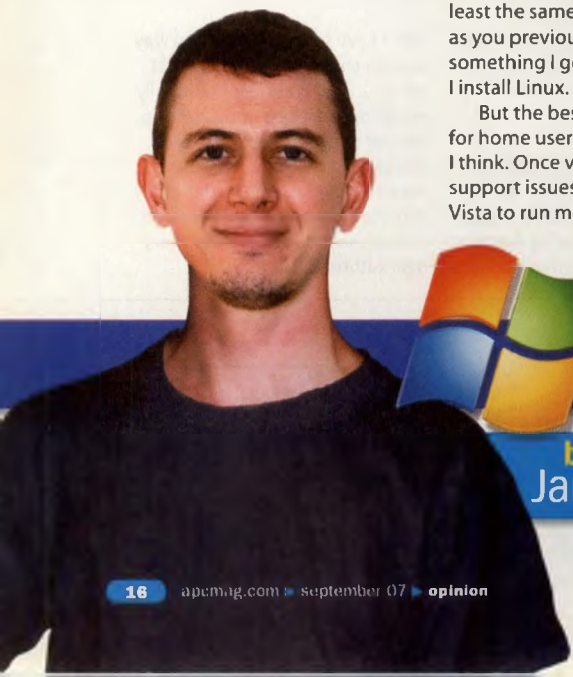
Business users are similar to home users in that they don't get much of a choice about which operating system they use. But at least businesses in general do get to choose when and how migrations take place. So far very few businesses have transitioned to Vista, in spite of the interest. This is not due to any concerns about its efficacy, but rather the very large-scale changes that will need to be implemented to accommodate it.

The big question is whether Linux will be able to make any inroads against Windows as the preferred desktop OS for enterprise

environments. The opportunity is there, as CIOs are being forced to accept that some sort of migration will happen, sooner or later.

My feeling is that, although Linux is looking better all the time, only RedHat and Novell have the business models capable of offering supported systems on a large scale, but, having said that, the effort of moving a Windows-dominated environment to Linux would make the migration to Vista look like a mere matter of clicks. During Vista's beta phase and since release, I've been running regular side-by-side comparisons with Novell SLED10, and as impressive as this product is, the inherent dissimilarity with Windows and Windows-based processes makes it a difficult transition to justify.

Vista has yet to make a visible mark in the business community, but its presence is certainly being felt very strongly. **APC**



HastalaVista

by
James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Vista for you every month.



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Is Linux desktop ready?

Linux's core focus on being a server OS has stunted its development and suitability for the average end user, but the time is coming...

As much as seven years ago, in APC's *Linux Pocketbook* series, I said that it would be at least five years before Linux even approached a level ready for mainstream desktop use. I wasn't far off — we have Ubuntu now, which has made huge inroads — but it's still not there yet.

From an end-user perspective, I've covered (sometimes brutally) the flaws still present in distributions like Ubuntu that prevent it being a drop-in replacement for Windows — and no, I'm talking about an *alternative* Windows that looks and acts the same (frankly, I'd rather not if Vista is any indication of the Windows future) — but rather simply the level of intuitiveness and ease of use which Windows (mostly) exhibits and which would allow complete newbies to sit down at a Linux PC and get productive without any fuss whatsoever. That's the purpose of an operating system — to enable you to do what you want to do. Any level of effort involved in getting the operating system to a useable state for this (such as installing missing media codecs in Ubuntu, working around Vista's UAC etc.) is in direct opposition of that goal.

Linux has been a viable desktop system for years — as long as you

firstly knew what you were doing and secondly spent the time to configure it. And this is precisely why it hasn't been, and still isn't, a mainstream competitor to Windows for the desktop: it's not that it can't, it's that the effort and learning curve involved by the user to make it so outweighs the benefit it brings, at least for the majority (read: non-geek) of the population. The moment a Linux distribution tilts this in favour of that pristine goal (and Ubuntu is most on track for this), Linux will have arrived as a desktop operating system.

When I was chatting to Con Kolivas recently, an Australian Linux kernel developer, he outlined that some of the stumbling blocks for Linux as a desktop are more than just the ease of use and configurability that distributions like Ubuntu address.

Under the hood there are other problems: the Linux kernel has been built around and focused upon being a superb

server platform, and it does just that. But the demands of a kernel designed to run a server are very different from that of a desktop — for servers it's about the distribution and volume of processing power; for desktops it's all about interactivity, and the Linux kernel is horrible for interactivity.

For example, in the past especially, MP3 playback could stutter just because the user opened another application, or the desktop might have briefly frozen while I/O commands queued up. Issues which have in the past plagued Windows too. The difference is that a long time ago Microsoft put the user experience first, which is something the Linux community is still learning.

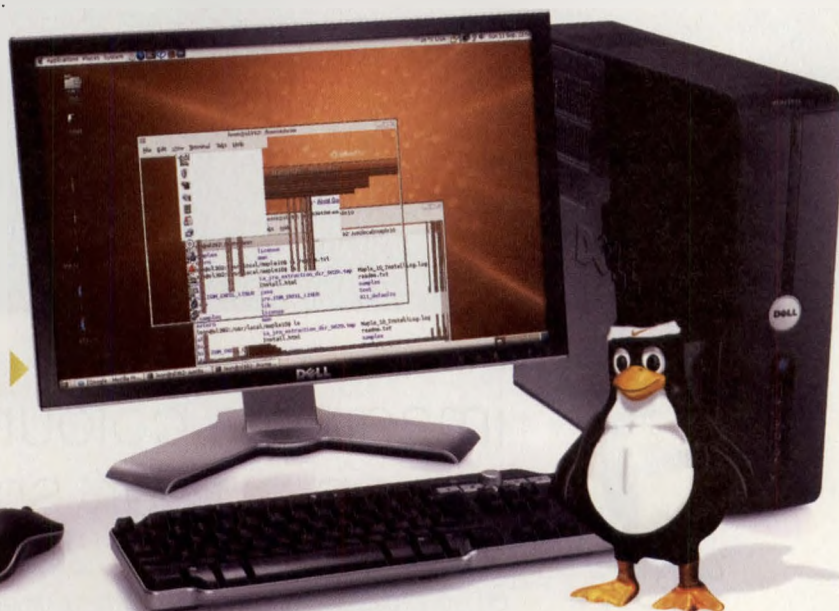
While there are numerous patches that can be used to make

the Linux kernel an interactive beast — some written by Con Kolivas and adopted into the kernel — it still has some way to go. Changing over a decade of development focus doesn't happen overnight, but it's getting there.

The most recent release of the Linux kernel incorporates a new CPU scheduler called the CFS (Completely Fair Scheduler) — it's designed to ensure that, no matter what the system is running, processes get enough time (and get it frequently enough) to be responsive for a desktop. But it's just the beginning.

I said it a long time ago and I'll say it again now: Linux isn't ready for the mainstream desktop yet. But, I'll amend my prediction: two years, and we'll finally see it arrive. **APC**

When will I be famous?
Linux still has a way to go
before it's on par with
Windows desktops.



LinuxWindow

by
Ashton Mills

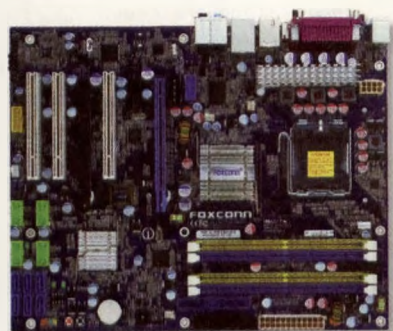
Editor of the Linux Pocketbooks series, and more recently Atomic magazine, Ashton has been a tech journo for over 12 years, including five years with APC.



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Training wheels

So-called computer trainers are not always as expert as they claim, as some of their students tell us.

A year 12 student, whose name is withheld, did a basic computing skills class, and was shocked at how little his teacher actually knew. "For example, he always thought that Windows XP was the magical cure for every computer-related problem. One day he told us: 'In the past, all computer rooms used to have power isolation buttons at the front. If an electrical fire broke out, you could cut electricity to all the computers in the room. Now, however, since all our computers have Windows XP, electrical fires are a thing of the past.'" The student thinks his teacher should be praised for discovering this undocumented fire-prevention feature in XP.

DUMB TRAINER 2

Paul Smith from Cairns built a PC for an "IT/Computer trainer," who would use it to teach computing to disadvantaged kids. He took it to her house and she fired it up for the first time. "She was very happy until she clicked on 'My Documents' and gave me a dirty look wanting to know where her documents were," says Smith. "Oh my god, I thought. And she's a computer trainer? I explained to her she needed to create some documents



"OK, who installed Vista on this machine?"

first. But she explained that she opened the My Documents folder on her machine at work, her documents were in there! 'Coo Coo' I thought. She was very upset because she had a client arriving any minute for computer training on her new PC." Smith says he got out quick, not wanting to see the disadvantaged student becoming even more disadvantaged after a lesson with her.

DUMB TRAINER 3

Austin Dewey from Tumut was sent on a work experience program by his school, in which he was to be tutored by a "computer guru". One day, the expert and self-styled "hacker" told him he'd tried everything to reduce the size of the text in the IE browser, and boasted: "I've hacked this IE to pieces trying to get the text size smaller but nothing works." Dewey recalls, "I told him he should try clicking View > Text Size and changing the font to

a smaller size." The boasts stopped after that.

DUMB STUDENT

But it's not always teachers that end up looking dumb. Students do as well. Reader Mark Laffan recalls telling a student who'd accidentally formatted a floppy disk that his data was lost. The student wasn't happy, complaining about the confusing "terminology" on the computer menus that led him to select the wrong option and then format the disk. Laffan asks: "Since when has 'This will erase all data on your disk, do you wish to continue?' been computer terminology? I think it's to the point, don't you?" Mark, we think the applicable terminology here is PICNIC (Problem in Chair Not in Computer).

DUMB STUDENT 2

The first members of Generation Y, which supposedly infuriates employers because of its

determination to enjoy life as much as hard work, were well in evidence at universities some years ago. Michael Stack, now a senior analyst programmer, was head coder for lectures at his university. A student came in with a disk that the computer wouldn't read. "The disk looked a little worse for wear, but not as bad as some I'd managed to get working. It was when I pulled back the metal protector to see what the surface looked like, and was greeted by sand falling out of the disk, that I started to suspect why it couldn't be read. When I asked him where he kept his disk, he replied, his surfing bag."

LIGHTS OUT

When the power goes off, sometimes the lights also go out in end users' brains. Reader Gregory Lawrence was providing tech support for a restaurant chain. "I had a call from one of our restaurants, saying the computer had lost power. After spending 10 minutes getting them to check power points, cables, store fuse box etc., I happened to overhear someone in the background say 'Can you pass the candle?' The restaurant manager then admitted to Lawrence the restaurant was in the middle of a power blackout. Asked how he expected Lawrence to get the computer up and running, the manager protested that the restaurant should have been running on its UPS power. Lawrence pointed out the installed UPS was designed purely to help



EndUser

from
The readers of APC

APC readers who deal with new computer users or incompetent IT administrators share their survival stories.

shut the system down safely in the event of power loss — not run the computer plus the entire restaurant until the power came back on.

POWER AND WATER

Some end users have missed out on not just the fundamentals of computing, but also those of electricity and self-preservation. Andrew Marshall, a veteran of 22 years in IT, recalls a panicked user ringing from Adelaide shouting: "It's raining and the roof is leaking, water is pouring onto the computer. Should we turn it off?" Marshall shakes his head and says, "You would think people would figure water and electricity are a dangerous mix."

EMAIL IS DOWN EMAIL

Sometimes, the problem is not lack of computer nous, it's lack of any nous at all, as Lachlan Pearce of Ashburton, Victoria, found. He works on the help desk for a large financial institution and was gobsmacked by a user request when the email server went down. "The user was asking if an email could be sent out to the whole office letting them know there was an email outage," Pearce says. "I mean, seriously..."

ANGEL FROM ABOVE

Gordon Drennan was astounded when his seventy-something-year-old neighbour bought a GPS navigation unit for his car. "He thought that that the nice 'Karen' who told him where to turn was a real person who was watching his car from a satellite. He was very disappointed when I told him there was no such person." Drennan also had to tell his neighbour that it was not possible — despite what the Harvey Norman computer salesman had claimed — to buy an additional chip for his



YOU WOULD THINK THAT PEOPLE MIGHT FIGURE OUT THAT WATER AND ELECTRICITY ARE A DANGEROUS MIX

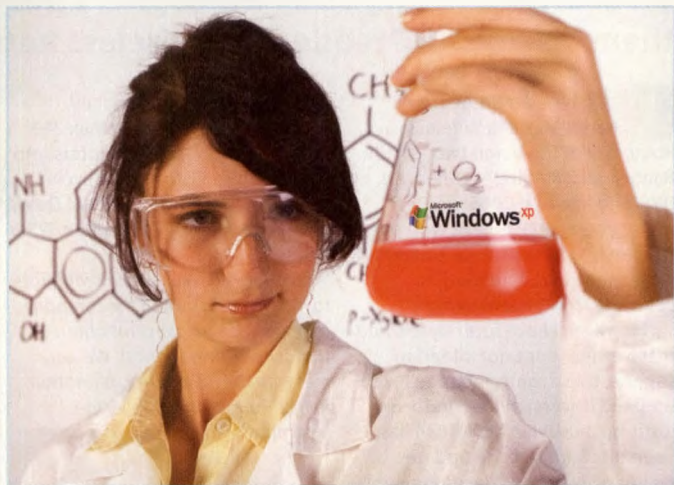


"Rain, and here I am without an umbrella..."

GPS device so Karen would warn him of any roadworks or crashes ahead."

WIRELESS MYSTERY

Anka McCluskey works for a small IT business in Inverell, NSW. She recently sold a new customer a new PC with a wireless keyboard and mouse and base station. "The next day I received a phone call complaining that her mouse and keyboard were not working." McCluskey asked her to confirm that each of the three components was connected. I then heard in the background, 'Three parts, is that what this flat-looking mouse is?' Yes, she hadn't plugged in the base station, saying: 'I thought you had given me a spare, flat looking mouse. I had left it in the box it came in.'"



"Finally, with this Windows XP, the world will be rid of all war, famine, disease and poverty. I'm gonna be rich!"

WIRELESS MYSTERY

Wireless continues to confuse. Paul Fildes, an Information Systems Coordinator, was puzzled by a user's complaint that when she fired up Word, it kept putting endless line breaks in the document. "I went and had a look at the machine and checked that no keys were stuck down or anything obvious like that," says Fildes. Then he noticed a wireless mouse connected to the machine. "I asked if there was a wireless keyboard as well. There was, but she explained it shouldn't cause a problem because she'd put it away in a cupboard. So I opened the cupboard and there it was, a fully-working wireless keyboard complete with books and files and whatever else piled on top. A quick

removal of the keyboard from the cupboard and the problem was solved."

PRESS POWER SWITCH

Incredibly we get several emails about users unable to figure out how to start a PC. Ray Man, from Bayswater in Western Australia recalls a user trying to switch on the PC by pressing the LCD monitor on/off button. "My first response to her was 'Why don't you press the button on the PC?' and her response was a classic from a dumb end user: 'I didn't get trained on this before, how am I supposed to know?' she hissed. Then she said it wasn't her fault and actually ripped into the IT support desk, which meant she's was blaming me, as I am the support person in that hospital." [ETTB](#)

WINNERS!

This month's published End User writers win a Microsoft Wireless Notebook Laser Mouse 6000 worth \$99.95. The first laser mouse from Microsoft designed for notebook PCs puts ultimate performance in the palm of your hand. With new, proprietary high-definition laser precision, an ergonomic design and smart navigation features, the Microsoft Wireless Notebook Laser Mouse 6000 delivers more comfort and control than laptop touch pads and toggles. Featuring a snap-in receiver for easy storing and longer battery life, the Wireless Notebook Laser Mouse 6000 connects directly to a USB port. IntelliPoint mouse software (included) is necessary for full functionality.



SEND US YOUR CONTRIBUTION AND WIN A PRIZE!

Send in your tales of woe involving dumb end users or incompetent techies to apcenduser@apcmagazines.com.au and if we print it, you'll win a prize. You must supply contact details in order for us to verify your contribution.

Out of range

Vista drivers: everybody wants them but not everybody can get their hands on them, as one APC reader and wireless networker found out to his surprise. . .

I purchased a Netgear RangeMax 240 Wireless Router (WPNT834) and two RangeMax 240 Wireless Adapters (WPNT511) in mid-2006. The router and adapters have worked flawlessly since that time, providing high-speed and extended-coverage MIMO networking.

However, I have recently learned that Netgear does not intend to support these router/adapters with updated drivers under Windows Vista, because the "WPNT834 has been discontinued, no updates planned". Netgear's position on this means that I either do not deploy Windows Vista amongst home office and family computers or I must purchase new hardware to do this.

I find this completely unacceptable, since these Netgear products were released in Australia during 2006 and after the Windows Vista launch date had been identified. Furthermore, the RangeMax 240 products are still available for sale today at online stores (Harris Tech, Expansys etc. and are named by Netgear on its Australian web site: www.netgear.com.au). Indeed, in Australia, the RangeMax 240 wireless networking products have not been discontinued from either online or storefront points of sale — and this is now some time after the official release of Windows Vista.

I have previously communicated with the Netgear technical support email address for Windows Vista, but no response has been received. I would dearly appreciate if you could prevail upon Netgear Australia to explain why a recently released product, formerly their premier 'flagship' for 802.11 MIMO, could be so quickly made obsolescent — and by a company who clearly lacks any intention to release Windows Vista driver updates. Rhetorically (but

pointedly), how long do they intend to sell their RangeMax 240 products, routers and adapters into the Windows Vista release cycle?

Glen M Davis
Lidcombe, NSW

Watchdog referred Glen's complaints to Netgear and invited the company to respond to his concerns about the lack of driver support. We were met with the following explanation for the RangeMax 240's Vista-incompatibility:

Dear Watchdog,
Netgear's RangeMax 240 adapters, which were released in Australia in January 2006, are developed on pre-Draft N wireless technology from a company called Airgo. It is our understanding that Airgo provided technology to many of the leading home networking vendors around the world (and which is easily recognisable by the distinct three-antenna design). Airgo was acquired by Qualcomm in December last year and, as a result, has ceased development of the Airgo 240 chipset, which has in turn hampered vendor efforts to produce a Vista driver.

We acknowledge that some customers who have purchased a RangeMax 240 product may be inconvenienced by the lack of supporting drivers if they upgrade to Windows Vista. As such, Netgear

Australia is offering a trade-up program for customers who have deployed Vista and are unable to use their existing RangeMax 240 adapter. This offer applies to customers using the WPNT511 RangeMax 240 Notebook Adapter.

Netgear customers who wish to take up this offer can send their contact details to sales@netgear.com.au. Netgear will finalise the details of this offer shortly and will contact customers who have emailed the sales department to arrange a replacement adapter.

Netgear would like to note its RangeMax and RangeMax Next family do have accompanying Windows Vista drivers, which can be downloaded from Netgear's web site at www.netgear.com.au.

Kimberley Odewahn
Marketing Manager
Netgear Australia

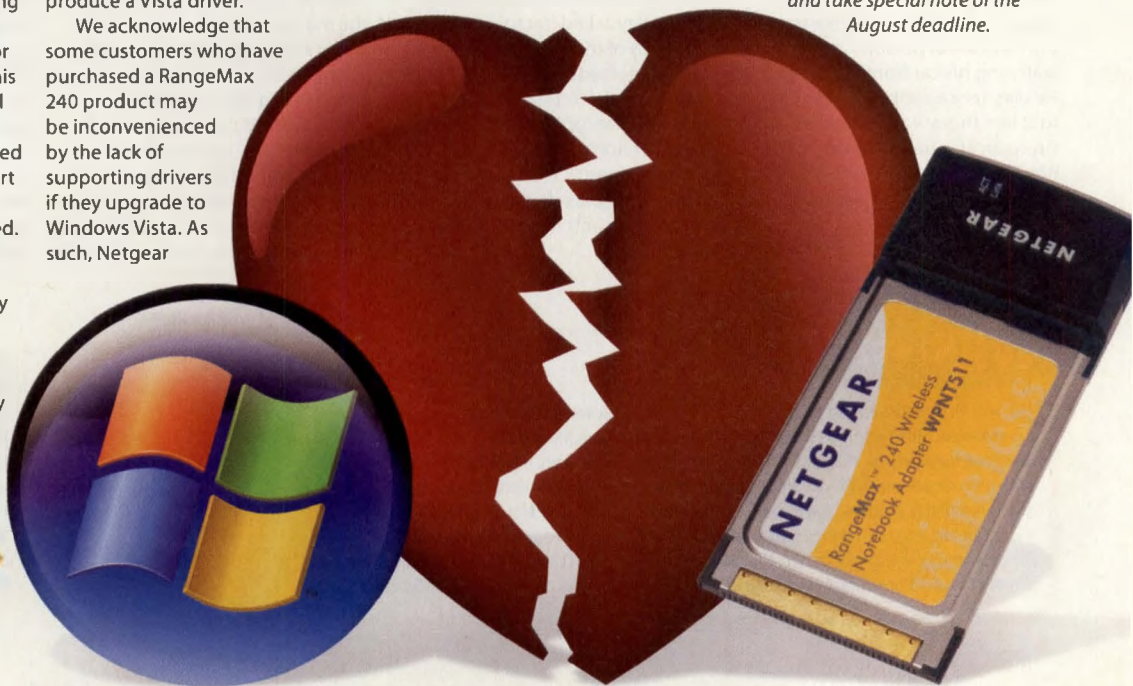
Watchdog pursued Netgear for further details of the upgrade deal and was told by a company spokesperson: "Netgear Australia is offering the trade-up program for customers who have deployed Windows Vista and are unable to use their existing

WPNT511 RangeMax 240 Notebook Adapter. During July and August, customers who purchased the WPNT834 RangeMax 240 Wireless Router and accompanying notebook adapter within the past six months and have since deployed Windows Vista and found they are unable to use their existing adapter, will have the option to upgrade their adapter at 50% off the recommended retail price.

Eligible Netgear customers will be able to purchase the WN511B RangeMax Next Wireless-N Notebook Adapter, which is supported by Vista drivers. Customers wishing to take up this offer should send their contact details to sales@netgear.com.au and fax a copy of their contact details, Vista Activation Key and an invoice proving purchase of the RangeMax 240 products to (02) 8448 2010 (customers should note 'Vista Upgrade Offer' in the subject line of the fax and email to ensure prompt attention). Netgear will then contact interested customers to arrange payment and delivery."

APC encourages any RangeMax 240 users affected in this manner to take Netgear up on its offer — and take special note of the August deadline.

No love lost between Vista and the 240 — so if you're affected, take up Netgear's special offer (if you can meet their pretty strict criteria...).





THANKS FOR NOTHING, MATE



Jon Harsem, IT services manager with the Sydney Church of England Co-educational Grammar School, Redlands, NSW, sought i-mate warranty support for one of his users, whose Smartflip smartphone had started to play up: "A plug failed during what I would think was normal use. I am not sure whether this person was any more heavyhanded than others, but I doubt it." However, lengthy delays in getting through to i-mate support suggested to Jon that "i-mates are a no-go-zone for future purchases." After 30 minutes on the phone (most of it spent on hold), Jon was not impressed: "Luckily I haven't had to fix my JAMIN

yet, but I think I'd have a better chance of getting a date with Jennifer Hawkins." Eventually, i-mate denied Jon warranty support. Allison Caruk, brand manager for i-mate Australia told Watchdog that i-mate was familiar with the case: "This was presented to us back in April and was assessed by the service centre and closed due to physical damage to the system connector, ie. our service centre did not deem the damage was the result of normal use. . . All i-mate customers in Australia receive a 24-month global warranty as standard. We are fully prepared to stand behind our products and will honour any legitimate warranty

claims." Allison would not be drawn on Jon's allegations of excessive call centre queuing, commenting that i-mate had already conducted a "thorough investigation" into Jon's case. Jon remained non-plussed with i-mate's response, calling their lack of warranty support "a shame indeed": "I would have loved to get an official document from i-mate as to what they consider 'out of warranty' damage. I take offence to the insinuation that we are trying to subvert the system or that we're doing 'the wrong thing'." Jon said next time his organisation would opt for Dopod, or another alternative brand, calling this "a really easy choice."

NOW YOU SEE IT, NOW YOU DON'T

I am writing from Best Buy Electrical in Balcatta. One of our customers bought an integrated Panasonic 80cm LCD seven months ago and, very soon afterwards, found that the TV would sometimes not turn on unless it was unplugged and plugged back in again. He took the TV to a service agent — who returned it to him with the problem unfixed.

The customer then asked for our assistance in the matter. Our calls to Panasonic have not yielded any result — they refuse to replace the TV. The Panasonic rep who we had originally dealt with has now left the company, and we now don't have a representative who is willing to help us.

In the meantime, we have lent the customer another Panasonic TV, and he left us his. During its two-week stay with us, all our staff observed the problem a number of times. A man from the service agent came out to pick up the TV again and take it to be repaired, and I demonstrated the problem to him, at which point he said, "It's probably a software problem".

Now, the service agent has called us and told us that they can't see a problem, and that the man who picked up the TV didn't see the problem either.

For obvious reasons, the customer is furious with Panasonic and the service agent's attitude and is threatening to call the Australian Competition and Consumer Commission. The matter is placing a great deal of strain on us which we really don't need. My colleagues and I are sick of Panasonic and the service agent giving us the runaround for months, and we really need something done quickly.

Spiro Ognjenovski and Chris Lees
Best Buy Electrical
Balcatta, WA

Watchdog contacted Panasonic to look into Spiro and Chris' problems with this troublesome telly.

Dear Watchdog,

Thank you for your correspondence in regard to the letter from Best Buy Electrical Balcatta, WA.

I have followed up this matter and can provide you with the following update.

When our Service Centres received the TV for repair, neither was able to duplicate the fault at their premises.

A technician from Panasonic's

authorised Service Centre has since visited the store and witnessed the intermittent fault described in the letter. Panasonic has now made arrangements that will allow the retailer to be issued with a credit, so the customer can select a replacement product.

Thankyou for bringing this to our attention. I regret any inconvenience caused to the customer and the retailer and will be reviewing our procedures in relation to this matter with the

view to avoiding such a situation in the future.

Brett Buckingham
Director, Customer Service
Panasonic Australia

Chris from Best Buy confirmed the matter was being resolved as described by Panasonic, noting that, in addition to Watchdog's investigation, the customer contacted the ACCC for assistance, "and this seems to have prompted Panasonic to act on the faulty product. Thankyou for following the matter up."

On the fritz — not that everyone can tell...



watchdog@acpmagazines.com.au

Has an IT vendor or telco stuffed you around? Let us know about it and we'll chase them for a solution on your behalf. Letters sent to watchdog@acpmagazines.com.au must include the writer's full name, street address, suburb, state and phone number to be considered for print publication (please also include details such as invoice numbers and people you've spoken to). Address and phone details will not be published. All correspondence becomes the property of APC and is subject to editing.



Vista

Epinions Special

In this special edition of Epinions, we bring you a fraction of the feedback we're getting from APC users on Vista — whether it's about Vista itself or the lack of driver support from third parties.

Reading APC July 2007, I was struck that the 'No incompatibilities here' and 'Creating Vista' articles (pages 20 and 82 respectively) formed the most sublime combination of artful omission and not-well disguised propaganda. Chris Flores (Vista Group Product Manager) waxes lyrically about home and lifestyle features within Vista, such as self-repair, multimedia handling and instant recognition, and James Bannan talks about applications and XP compatibility. But while both gave plenty of evidence that the system was great for home, neither mention the problems experienced with work environments. I like XP in the business environment because it can be made to be a 'cookie cutter' — a standard roll-out that can connect to a multiplicity of databases, work well on networks that are not 'bleeding edge' and can cope with the workgroup security model. Not every one of my clients has Active Directory or a Public Domain Controller, or Microsoft (or MS-approved) databases, integrated email or standard printers — this is real life in small business. Apple has lost market share because it concentrates on individualisation, high-end customisation and the personal multimedia aspects — not convenient features in a work environment. Unfortunately, it looks like Vista is falling for the same hype.

**Peter Trenaman
Belmont, WA**

MISSING WIRELESS DRIVER

It's been several months since Vista was released to manufacturers, and nearly seven months since APC first wrote about the lack of Vista support from various ISPs. Sadly, some ISPs are still languishing on support for the OS, leaving users like myself stuck with Windows XP until they can get their act together. I've been an Optus Wireless Connect user for about 7-8 months, and while I know that support for devices in new OSs is generally slow (despite Microsoft making available technical pre-releases and betas in excess of 12 months before the RTM), you would have reasonably expected that by now all XP-supported devices would have software and drivers available for use with Windows Vista. Not so.

The PC Card version of the Optus Wireless Connect product still does not provide any support for Vista. The PC card in question (a GlobeTrotter 3G Quad) is manufactured by the Belgium-based company Option Wireless Technology, and despite their announcement at the 3GSM World Congress in February that the card is now Vista-compatible, they still have not released compatible software to mobile operators to enable its use with the OS. Despite contacting Optus nearly every month for an update, they have no new information to share other

than they are aware that the manufacturer is working on this issue — but they do not have a release date or any further information. Until then, I continue to be stuck in XP hell, despite my desire to upgrade to Vista for my production laptop. In a phone call this morning to the Optus Wireless Data support group, the agent I spoke to indicated that he takes no less than 3-5 calls per day from customers asking about Vista.

**Michael Harris,
Rivervale, WA**

APC asked Optus for an update. A spokesperson said "Optus is committed to providing the highest quality of service to its customers. Optus continues to review and revise its systems to evolve with the changes that Vista brings. Optus customers using Vista will be supported later this year." Optus have been updating Vista drivers for some other modems, according to some APC readers.

MISSING 64-BIT DRIVER

I obtained a (Maxon) Next G Turbo Modem from Telstra last February for a Taurion 64-equipped laptop with Vista Basic installed as the OS. There is still no suitable 64-bit driver for the device to operate as intended. How long is a fair thing to wait for something that should have existed before the unit went on sale? Even the Maxon site has no indication of when we can expect the driver to be available.

**Ian J Downie
Hervey Bay, Qld**

The Maxon Vista drivers were finally released as we went to press!





apc

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IN AN ATTEMPT TO PLEASE EVERYBODY MICROSOFT HAS LEFT PEOPLE THINKING VISTA IS TOO MUCH OF A HASSLE

MISSING SATELLITE DRIVER

Just a word so buyers of Vista won't get caught as I did. Don't buy Vista if you use BigPond Satellite. BigPond currently do not offer any support for Vista when it comes to Satellite. (Which is great when you live in outback South Australia!) As far as I can work out, you can't get much else beside dialup with Vista. I wish I had known this before buying a new computer with Vista on it. All that aside, I do like the way Vista works.

Karen Cains
 South Australia

BigPond states that Windows Vista is only supported with the add-on four-port Ethernet Gateway unit (DW4020), or the DW6000 or HN7000S modems.

ALL JUST HOOPLA

So much for the Windows Vista 'change your life' hoopla. I work in an IT environment, and it seems to me that no-one wants a bar of Vista. This may be because there are so many different Vistas on the shelves; Joe Blow would not have a clue which one he needs or wants. Choice is one thing, but when average users with limited knowledge of the ins and outs of this OS are placed before a rack containing a bevy of Vistas with little to no information about their differences, is it any wonder they just walk away? So in an attempt to please everybody I think Microsoft has left most people thinking the whole Vista thing is too much of a hassle. The only thing that could turn this white elephant around would be a dramatic price drop and a limit of four versions: Home, Business, Server and Ultimate. Along with some practical information on the box.

Jason Keefe
 Clarendonvale, Tas

THE COST OF VISTA

Here's a heads-up on the cost of Vista from a Canberra retailer, Canberra Computer Centre. Cost to us of Vista Ultimate is \$239 (all four of our distributors sell it to us at this price). Cost to consumer of Vista Ultimate should not exceed \$450 for customers who need the support (eg. installing software or repairs to the OS) or \$350 to the smart cookies that don't. Now, some advice for the home user: don't buy Vista until at least until October — stick with XP for the moment (I am already sick of the phone calls to remove Vista from people's brand-new PCs — they get it home and find that half of what they want to do won't work because there are no supported drivers or software yet) unless you

replace all your current peripherals and applications with Vista ones (not an acceptable option yet for a lot of consumers).

Chris McMullen
 Kambah, ACT

OUTLOOK INCOMPATIBILITIES

I write to draw your attention to the incompatibility of Outlook versions prior to version 2003 with Vista. The issue is that email account passwords are not retained and have to be re-entered every time Outlook starts. This is alright if you have one or two email addresses, but many of us have five or more and re-entering the passwords each time is not a viable option long-term. The most disappointing aspect to this



It's a gloomy outlook for versions older than Outlook 2003.

epinions@acpmagazines.com.au

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incompatibility is that the Vista Upgrade Advisor does not report any problem with pre-2003 versions of Outlook. Some, with unkind minds, might think this was a deliberate action by Microsoft to force thousands, if not millions, worldwide to upgrade their Office software. I would not have upgraded my system to Vista if I had known I would have to buy a new version of Office just to use Outlook.

Ray McHenry
Harkaway, Vic

WOW STARTS NOW

I just went to a shop and bought Windows Vista Home Premium edition for over \$400, only to get it home to discover that the 64-bit version isn't even in the box. There is a slip of paper inside instructing me to go online and pay an extra \$14.85 to get the 64-bit version of the OS. Why didn't they just put it in the box or even on the same DVD as the 32-bit version? It isn't even clearly written on the outside of the box that it is only the 32-bit version inside — it is written in very small print on the bottom. Imagine going into a shop and buying a music CD only to get it home and open it up and find a bit of paper inside telling you to go online to pay to have the actual CD mailed out to you at an additional cost. Now I have to wait 2-4 weeks to actually use the OS! Well the WOW certainly does start now: WOW, the box didn't even contain the OS you just paid \$400 for — WOW.

Craig Woodcroft
Newtown, NSW

VISTA SLOGANS

"A good majority of problems has been solved from previous builds of Windows in Vista"; "Vista is the most capable operating system that has been released to date"; "Vista will work with 98% of hardware due to 20,000 or so drivers that have been included," says Microsoft. But Vista has been unable to detect my PCI modem. It was detected by XP but not Vista, nosiree.

Chris Wang
Aspendale Gardens, Vic

NOT SURPRISED

Before people complain about drivers, they should realise that Microsoft is not a nice company to deal with. Linux on the other hand



is an OS that evolves; once bugs have been fixed, they are fixed for good. There is no going backwards and starting again. I think companies would have a much easier time writing software and drivers for Linux. I think what scares some companies off is that they don't see the financial returns with Linux. I for one would rather pay for software that runs reliably on Linux, rather than screw around with Microsoft's bodgy effort. Microsoft is not evolving: it keeps going back and returning with a more bloated, resource-hungry, slower OS with the same problems and a different look. A final note: Bill Gates would not have so much money (that he doesn't know what to do with) if they had not been overcharging us for years.

Tony Joyce
Macquarie Fields, NSW

CAN VISTA ACTUALLY DO TEXT?

I am in the process of upgrading to a new LCD, and so have been running around many shops looking at various monitors (HP, BenQ, Philips, Acer etc.). I most often write text and scarcely use my PC for games. I have noticed that

with PCs that have Vista (most often Home Premium) running, text is so badly rendered to screen that it would be unbearable to sit in front of your text editor for any length of time (in the shops, I just used Notepad). Mostly, the text has a shadow that can be either grey, reddish or greenish, depending on the monitor. The monitors that I could check all seemed to be running at their native resolution. On the other hand, XP machines presented their text quite crisply with no hint of shadows. None of the salespersons were able to fix this and indeed seemed to lose interest fairly quickly! Is this because of inadequate Vista video drivers? Anyone else noticed this?

Bill Carey
Manningham, SA

Vista Upgrade Advisor doesn't always tell the truth. Make sure you compare your system to Vista's requirements carefully before choosing a version.

OFFICE 2007 NEEDED

I recently had to set up my new computer with Vista Home Premium and had no luck at all with connecting my Dell Axim X51V — Vista installed it as an unknown device. I'm no newbie with PDAs, the Axim is number three (so far). I set out to find the solution on the net, but no luck. Everyone had the same thing to say: 'uninstall it, unplug it, reboot and run Windows update.' Or else, 'download the new Windows Mobile Device Center and install that.' Both didn't work. Others with the same problem were complaining on the net too, and all were annoyed that Dell's top-of-the-range PDA was not working with Vista.

I emailed MS customer support. They were very polite and helpful, but unable to offer a fix, and advised me to contact Dell. I phoned Dell and their advice was to download and install Windows Mobile Device Center!

As it turned out, the problem was that I was using Office 2003. I bit the bullet and bought Office 2007 and installed it. I made sure to uninstall and unplug the Dell first, and uninstalled Windows Mobile Device Center. Bloody beauty! When I reconnected the Axim, Vista found it, and now it's all working as it should. So now where does that leave us? I reckon they should come clean and say that you *have* to buy Office 2007 to use a PDA on Vista! Oh boy, what a can of worms we have here! Please get my message out to all those other Axim owners who must be getting pretty freaked out by now.

Kerri Maitland
Eight Mile Plains, Qld



VISTA FEEDBACK

If you have Vista installed, APC would like to hear about your experience, good or bad. Email us at epinions@acpmagazines.com.au. If you have technical queries relating to Vista, other readers may be able to help you in our new Ask APC section: email askapc@acpmagazines.com.au — see page 84.

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NSW SYNEX 02-8831-9999
RECTON 02-9748-7725
ALTECH 02-8831-9999
QLD SYNEX 07-3017-2000
ALTECH 07-3017-2000

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apc labs

DETAILED PRODUCT REVIEWS AND COMPARISONS

REVIEWS

CHALLENGES

BEST TECH



This month in Labs. . . Having a go

Building your own PC holds a dear place in the hearts of all good computer geeks. But when something goes wrong, there can be trouble. For those just setting off on the voyage of building or upgrading a PC, it's daunting. Very daunting.

A few months back, a software vendor was early for a meeting in the APC Labs, and I desperately needed to finish building a test bed so I could get Windows installing during the meeting (it's all multi-tasking here, folks!). It's something I do very often, and could probably make a good go of it in my sleep. This fellow watched with a look of astonishment on his face as I flipped in a chip, got it squirted and scraped (with thermal paste), cooler snapped on, RAM clicked in, a multitude of

colourful wires plugged and a graphics card slipped in to its slot. A jump start with the metal cap on the end of a handy USB thumb drive and the system whirled to life. The whole process took around three minutes.

This guy was flabbergasted. Having gone from feelings of vague uneasiness about what's 'under the hood' of a PC to seeing one come together from a pile of parts really threw him. "It's that easy?" After his show and tell, the fellow wanted a lesson. The brief demonstration of PC construction clinched the deal with him, he was going to build his first PC. Good on him.

I showed him some tips and tricks, like how to properly apply thermal paste, and which way around cables and wires went, then

sent him off with dreams of rolling his own. A few emails (and one set of bleeding knuckles) later, he was done. Further down the line, this fellow has now built six PCs for friends, family and himself. He's caught the bug, and whereas just a short while ago, computing was a job to him, it's now a passion. Furthermore, he's shown a friend or two how to work 'under the hood' of their PCs, and it's started a rolling snowball of upgrading and new PCs in his group of mates. They're all really into it as well.

What we forget sometimes, constantly surrounded by the tech and trappings of IT, is that, to many, it's a lark and some it's a grind. But stepping out of your area of expertise can reawaken

that rush you got when unboxing your first PC or executing your first bit of code. What I propose is that, this month, do something with your computer that you haven't done before. Start to learn how to program, upgrade or build a new PC, or install a piece of software and try your hand at something you're not familiar with. You just might like it! **APC**



THIS BRIEF DEMO OF PC CONSTRUCTION CLINCHED THE DEAL – HE WAS GOING TO BUILD HIS FIRST PC. GOOD ON HIM

NICK RACE – TECHNICAL EDITOR

Geek

**WHAT'S THIS?**

Each month here at APC we get told about hundreds of new products and gadgets that we normally don't have space for in the magazine. In this new section in the reviews pages, we will bring you wider coverage of what's new.

**INVITATION ONLY**

Lenovo's Thinkpad Reserve Edition Notebook is the world's most exclusive laptop. Bound in leather, it costs US\$5,000 even though it's really just an X61c Thinkpad. But you can't just buy one. Lenovo offers them by invitation only to special customers. Steve Jobs wishes he'd thought of this one.

www.thinkpadreserve.com

**NEXT BEST**

If you don't get that Lenovo invitation, you should consider ASUS's hot pink leather laptop, the S6. With this dual-core 11.1in widescreen machine, you're sure to be taken seriously in business meetings. Price: \$2,699

www.asus.com.au



Dell Inspiron 1720

A desktop replacement for the masses.

If you've ever considered replacing the home PC with a notebook, you'll have come across media centres like this one. They're big, often weigh a tonne, and are loaded with extras that jack up the price. So are these luxury notebooks worth considering?

The answer is yes, if you're prepared to watch movies at home on a laptop. When the work day is over you can take this Inspiron, stick it on your couch or coffee table, and stretch yourself out while watching a movie. That's the one thing you still don't do too often with a desktop PC.

Sure, as a desktop replacement, this Inspiron also gives you solid performance and gaming, plus it can double as a home office system. But the single ace up its sleeve is that you can cart it around the house. Even though this is a big heavy notebook, the key feature here is still portability.

Now with a Blu-ray option in the Inspiron, it also means that if you don't care about big screens, then notebooks like this one are a viable alternative to a set-top box.

This is exactly Dell's sales pitch for the Inspiron 1720 — the company's slogan for the machine is 'multimedia powerhouse'. And the machine doesn't disappoint, considering the relatively reasonable price.

The key here is power and battery life, and the Dell succeeds in both areas.

Under the hood this is a solid spec. The configuration we tested came with Intel Core 2 Duo T7500 2.2GHz, 2GB RAM and 2 x 160GB hard drives, and it's the latest-generation Centrino platform.

On the testbench the Inspiron showed itself to be a strong performer — a PCMark05 score

of 5,367 beat all the notebooks in our July 'notebook shootout'.

Where media centres like this one shine is in graphics. With Nvidia's GeForce 8600M GT under the hood, Vista is well and truly covered, and you have enough grunt for 3D gaming. The system coped well when we ran Quake 4 at a bumped-up resolution. On the bench, the machine scored a solid 3DMark06 score of 2,944.

This graphics setup should also provide an advantage when it comes to video playback — Nvidia is pushing the fact that its 8600 series takes all the responsibility for high-definition video decoding off the CPU.

The other highlight was battery life. We tested this by first choosing the 'power saver' plan, turning off the sleep and hibernation functions, dimming the screen to 40% brightness and turning off wireless — we timed how long it took for the battery to last while playing a DVD movie.

The result was a whopping three hours and 20 minutes of battery life. You'll get less with the wireless on and the screen turned

up, but it's still an impressive result, and it's thanks to the 9-cell battery. By contrast, the best performer in our July roundup lasted two hours and 44 minutes.

The price is also respectable, when you consider this Dell is cheaper than some of the older-generation notebooks we've reviewed in the July roundup. Compare it to the HP Compaq NX9420, which sold for \$2,999 when we reviewed it for July, with 1GB RAM, 120GB HDD and an ATI Mobility Radeon x1600. If you're bundling in Blu-ray with the Dell configuration here, you'll pay \$3,649, but that still stacks up well against Sony's 17in VGNAR38G Vaio, which costs \$5,499.

You can get a cheaper Core 2 Duo desktop replacement with 2GB RAM for less though, so the key decision here is whether you'll get value out of the multimedia feature set. Do you want to be able to play your movies wherever you want around your house? If the answer is yes, and especially if you want high definition, then stick this machine on your shortlist.

William Maher



• **CONTACT** Dell
• **ONLINE** www.dell.com.au
• **MARKET** Prosumer
• **PRICE** \$2,769 (as reviewed)

✓ CPU/battery performance; value.

• **VERDICT** ★★★★★

✗ No HDMI.

LG A1 Express Dual

Is this the ultimate road warrior's weapon?

This notebook is tiny. At 1kg the LG A1 is so light you could pop it in your bag and forget it's there. This is a shame, because while the A1 should be the ultimate road warrior's weapon, like many ultraportables it's hamstrung by battery life. We got around two hours — that's with wireless on for web surfing and the notebook in power-saving mode (display brightness lowered, and conservative CPU usage). You'll get more with wireless off, but it's still not a lot of time away from the power point.

The good news is that an optional 9-cell extended battery will go a long way to solving this problem. Still, be aware that in their stock-standard super-light configuration, some very expensive ultraportables can't match clunky, cheaper notebooks on batteries.

Out of curiosity, we ran a DVD rundown test to see how long the

• **CONTACT** LG
• **ONLINE** <http://au.lge.com>
• **MARKET** Everyone
• **PRICE** \$3,299

✓ Super light; small.

• **VERDICT** ★★★★★

✗ Battery doesn't get you far.

A1 would last playing a DVD (via the external drive). The result: one hour and 14 minutes. Let's be clear, this notebook isn't meant for watching DVDs — but it gives you a comparison point with larger notebooks.

Battery gripes aside, this is a great machine. Like most ultraportables it's not powerful — Intel Core Duo U2500 1.2GHz, 1GB RAM, 80GB HDD (PATA), Nvidia GeForce Go 7300 — but the A1 coped fine with general tasks like web surfing and office apps.

The key feature here is size. The A1's screen is 10.6in, which is just

enough to be incredibly small without making it difficult to see what you're doing. You wouldn't want a screen or keyboard much smaller than this. If ever there was an example of how the gap between notebooks and handhelds is disappearing, this is it.

William Maher



Acer iDea 510

Proof that media centre PCs can be good.

We've written many words on media centre PCs here at APC, and for the most part, we've found them dramatically lacking. For the first time, we're glad to say that we've found a good one!

The Acer iDea 510 is a lounge room small form factor PC with every connector, jog and dial you could possibly want for a media centre. It's similar in size to an older-generation DVD player, but still smaller than a VCR. It will fit in quite well with home entertainment hardware, and it won't look out of place under the telly.

The system is built around a Core 2 T5500 mobile processor on a 945-based motherboard. It

• **CONTACT** Acer
• **ONLINE** www.acer.com.au
• **MARKET** Everyone
• **PRICE** \$2,999

✓ Great hardware/software combo.

• **VERDICT** ★★★★★

✗ Horrendous keyboard.

continues the mobile (and thus, low heat and noise) hardware with a GeForce GO 7600. It sports a slot-load DVD-RW/RAM, perfect for playback and recording, a front-mounted LCD panel for use feedback, just like on a DVD player, play/pause/FF and rewind buttons on the case that are actually useable. The iDea 510 is bundled with a wireless keyboard with built-in trackpad, plus the usual MCE-centric remote control.

Connectivity is king on this beastie — the system supports DVI, HDMI, composite, component, S-Video and SCART, covering all bases. There's RCA stereo output, plus optical and digital SDIF (and audio through the HDMI, of course). The system's kitted with dual digital tuners, for simultaneous recording and playback and a 500GB hard disk drive for recording and storage.

It's not just the hardware that's had a good look in. Acer uses Vista Home Premium, with its built-in media centre functionality (plus a number of small but thoughtful fixes). It's a neat setup and works well.

Nick Race



PHONE CAM

Atekssoft's WebCamera Plus application transforms your PDA or smartphone into a web camera. Working through USB ActiveSync, Wi-Fi, Bluetooth, GPRS, 3G or LAN connections it can be used on Skype, MSN Messenger and others. Price: US\$19.90 www.atekssoft.com/



COOL LAPTOP

If your notebook is a small furnace, Belkin's Laptop Cooling Stand can help. Its wave design creates a channel for natural airflow, while its high-capacity blower fan drives heat away from the system. Price: \$49.95 www.belkin.com/anz



HEARING AID

When too much listening to MP3 players finally damages your hearing, there's now a fix: the new Oticon Epoq, a hearing device that allows users to connect via Bluetooth to their mobile phone, portable music player or laptop computer. Not cheap at \$5,000, but what price can you put on hearing loss? www.oticon.com.au



**SKYPE POTS**

Finally, more convenient VoIP calls. Using Linksys' iPhone Dual-Mode Internet Telephony Kit you can now make calls to Skype users over the net without a PC or you can place normal telephone calls over an existing standard telephone line. RRP \$239.95. www.linksys.com.au.

**SAFE EYES 5.0**

Safe Eyes 5.0, the latest version of the leading internet filtering software, incorporates a social networking feature that is able to monitor and track personal information that a child posts to online sites such as MySpace, Facebook, chat rooms and personal blogs. RRP US\$49.95 www.safeeyes.com

**SQUEEZE THE MUSICX**

Stream digital music from your computer and internet radio wirelessly to any stereo in the home with the Logitech Squeezebox wireless music player. It can play formats including MP3, WMA, WAV, FLAC, AAC and Ogg across an 802.11g network or Ethernet connection. RRP \$499 www.logitech.com.au/



EVGA 650i Ultra Motherboard

680i performance without the SLI.

Nvidia's 680i motherboard chipset has had a good effect on the PC motherboard market. Competing closely with the Intel 975 chipset, the 680i added overclocking functionality and the all-important SLI configuration for video cards that can only be had on an Nvidia chipset.

The problem is, the 680i is a very expensive chip. Prices for 680i-based motherboards easily hit \$500, while 975 boards can be had for \$100 less. The 965, mid-range chipset for Intel processors was \$100 less again, and that's a huge disparity — if you don't require SLI. Nvidia has launched a less expensive version of the 680i, the LT model, but really couldn't compete at the budget level. But now, the 650i and 650i Ultra models, which offer most of the performance of the premium chipset, have been outed. The main difference is that 650i Ultra only

CONTACT	Shadow Entertainment
ONLINE	shadowentertainment.com.au
MARKET	Everyone
PRICE	\$199

supports a single x16 PCI Express lane for graphics cards, completely ruling out an SLI setup on the lower-cost board. The 650i plain version can run SLI with two cards only using eight PCI Express lanes each — compared to the 680i, two x16 lanes.

The 650i Ultra doesn't offer SLI at all, using a single x16 slot for single cards only. Both 650i models also cut the SLI-Ready Memory/EPP functionality. This automatic memory overclocking system is integral to the 680i's performance leadership, but adds loads to the price of the RAM you need to take advantage of it.

✓ Inexpensive; great performance.

VERDICT ★★★★★

✗ No SLI; single Ethernet port.

The performance of the budget chipset is there, and if you don't intend on using SLI, or overclocking dramatically, there's no reason not to choose the 650i Ultra over its more expensive counterparts.

Nick Race



ASUS P5K3 Deluxe

P35, DDR3, E.X.P.E.N.S.I.V.E, check!

The P5K3 Deluxe is a flagship board from ASUS. It's a P35 chipset-based board, using Intel's ICH9R Southbridge. It supports DDR3 memory up to 1,333MHz. There's two PCI-E x16 slots, one running at 16x, the other 4x, with CrossFire support, two PCI-E x1 slots and three PCI slots. There's six internal SATA ports and two eSATA ports via the backplane. The board is bundled with a hard fixed ASUS Wi-Fi AP which supports 802.11b/g.

We tested P5K3 Deluxe with the latest and greatest of the new technology available.

CONTACT	ASUS
ONLINE	www.asus.com.au
MARKET	Everyone
PRICE	\$429

On the board we installed Corsair DDR3 1,333MHz XMS3 DHX modules, 2GB, and a brand-spanking-new (and 'next generation') Intel Core 2 Extreme QX6850 quad-core processor running at 3GHz and the new 1,333MHz frontside bus. It doesn't get any more up to date than this.

On the bench, the ASUS P5K3, with the 1,333MHz FSB hardware and the latest drivers from Intel eked out a PCMark score of 7,805.

Compared to the score for

✓ eSATA; solid design and package.

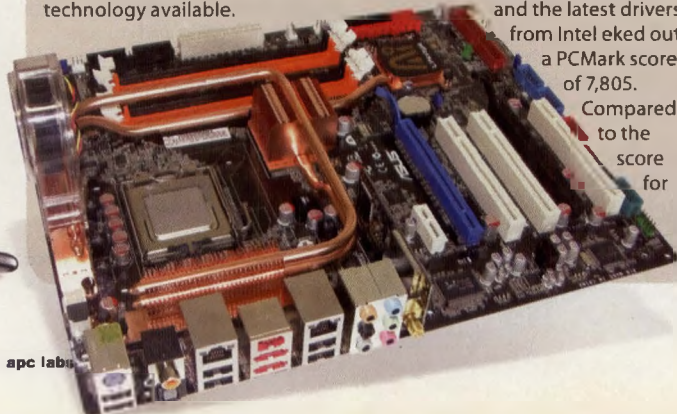
VERDICT ★★★★★

✗ Performance isn't worth the price.

DDR2-800, Intel's QX6800 quad-core processor and the same graphics card earned 6,837 points. That's a decent jump for a first-generation release, but it's not cheap. The memory will cost you five times the price of DDR2 in similar quantities, and the Intel Extreme processors have never exactly been cheap.

The design and implementation of the P5K3 is spot on. It's well laid out, with a solid heatpipe solution to keep the chipset and MOSFETs cool. It's got great potential to be the basis of a real powerhouse PC. Once memory prices drop and the speeds increase, this is a board to look out for. As it stands, unless you have very deep pockets, the DDR2 version might be better.

Nick Race



Inno3D 8600GTS Xstriker3

Cool and classy.

Standing out from the crowd in the video card market isn't an easy task. The plethora of cut and copied 'reference' graphics cards from vendors who just take the design from Nvidia or ATI, slap a sticker on the stock cooler and box it up is huge, meaning the majority of graphics cards on the market are identical to their competitors.

The major point of difference between many of these cards is how well they perform under stress. High-end coolers, which attract a slightly higher price tag, can feasibly add performance to the card as well — provided you run it out of spec (overclocking).

This card, the 8600GTS Xstriker 3, uses heatpipes, a low/

high pressure differential and a big quiet fan to keep the air moving across the chip. It works well. This card is overclocked to 675MHz core frequency, and 2,100MHz memory frequency — up from 625MHz and 2,000MHz of the stock card.

The Inno3D 800GTS Xstriker3 has 256MB of GDDR3 memory, gold plated connectors and supports output from dual DVI and component video. Is there a difference? On the bench



the Xstriker3 scored 6,036, compared to a stock 8600GTS with the same amount of RAM earning 5,852.

The slight overclock of the card, combined with the quiet, effective cooler is a winning combo. For a price premium, you get good performance with a thermal solution you know will cope with the overclock, without the fuss of fitting an aftermarket cooling kit yourself.

Nick Race

CONTACT Altech

ONLINE www.altech.com.au

MARKET Everyone

PRICE \$330

✓ Better than stock performance.

VERDICT ★★★★★

✗ Paying a price premium.

CASIO EXILIM EX-S880SR

The 8.1-megapixel EX-S880 is the latest addition to the Casio EXILIM Card series and comes with a high-quality movie function that makes the most of next-generation H.264 compression technology. Look out for the full review in coming issues.

www.casio.com.au



FOOTBALL MANAGER 2008 ANNOUNCED

SEGA Europe announced that Football Manager 2008 for PC and Apple Macintosh will be in stores before Christmas 2007.

www.footballmanager.net



Network problem solver? Meet your new assistant.



EtherScope™ Wireless Network Assistant

Introducing the EtherScope™ Wireless Network Assistant - designed to help you keep your 802.11a/b/g network secure and in control. Does everyone on your wireless network have permission to be there? Are all your access points secured? Add Gigabit LAN analysis to your EtherScope to troubleshoot problems on both sides of the access point.

Decide for yourself whether or not the EtherScope Network Assistant will be your next new hire. Go to www.flukenetworks.com/EtherScope to take a tour of the virtual demo, request an onsite demo on your network and get your hands on our free Wireless poster.

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**RAON EVERUN**

In addition to the OQO UMPC in our reviews pages, distributor Tegatech Australia has even more second-generation UMPCs lined up. One is the amazing AMD-powered Raon Digital Everun, which runs Windows XP Home Edition in a tiny package with a 30GB HDD and integrated keyboard. It should be available with a Telstra-approved HSDPA PCI-Express modem. Price: from \$1,299 www.tegatech.com.au.

**ALL-IN-ONE**

Linksys' new Wireless-G ADSL Home Gateway WAG200G is an all-in-one solution for internet connectivity, offering an ADSL2+ Modem, 4-Port Switch, Wireless-G Access Point and internet-sharing router in one box. Price: \$150 www.linksys.com.au

**TRAILGUIDE**

You can now get the Basecamp, web-based project management application on a Windows Mobile Smartphone or Pocket PC. A mobile client has just been released by Carry the Day. Price: from \$5.25/month www.carrytheday.com



Wacom Bamboo

Is this the death of the mouse?

Bamboo is Wacom's latest weapon in convincing us to seriously consider its products as mouse replacements. For the first time, it's aimed entirely at an audience that spends its time browsing the internet, emailing and creating spreadsheets — one that may well have no knowledge of Wacom's reputation as a leading name in art and graphic design.

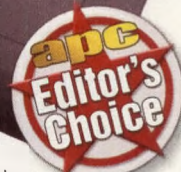
As an input device, its effectiveness is largely thanks to Microsoft's determination to rejuvenate the floundering Tablet PC market. Vista's handwriting recognition is by far the best in its class, requiring no training in order to interpret even the most eccentric hand. Along with the Pen Flicks gesture system, Vista provides a

strong platform for Wacom's tablets, allowing web addresses and search terms to be entered without a single key being pressed.

The tablet has been slimmed down considerably and sports a consumer-friendly black design, although little has changed hardware-wise. In fact, we're puzzled as to why Wacom has retained 512 levels of sensitivity for Bamboo. Vista only detects whether the pen is up or down, and while those with Photoshop will welcome the extra precision, the tablet is branded so heavily towards its function as a navigation device that

versatility will go unnoticed by many. Similarly, the touch-sensitive scroll ring adds appeal, but so would a simpler design and reduced price.

The key to Wacom's success in creating a viable alternative to the mouse is simple: it's handing you a device that looks, acts and feels identical to a rollerball pen. What concerns us is the Bamboo's asking price, which is still far higher than the average mouse. If Wacom can drop this, it may just get the revolution it's hoping for.

James De Vile

CONTACT Wacom
ONLINE www.wacom.com.au
MARKET Everyone
PRICE \$129

✓ 512 levels of sensitivity.

VERDICT ★★★★★

✗ It's still pretty small.

Dell 1320c

Dell's tiny new 1320c — more than meets the eye.

Compared with the frankly enormous, weighty colour laser printers that typified the market a few years ago, some of the latest 'personal' colour lasers have footprints barely larger than an A4 inkjet. A good example is the 1320c, Dell's smallest ever colour laser.

Much of the space-saving comes from the now highly popular 'inline' configuration of toner cartridges,

CONTACT Dell
ONLINE www.dell.com.au
MARKET Everyone
PRICE \$399

✓ 16ppm mono; 12ppm colour.

VERDICT ★★★★★

✗ 'Starter' toner 1,000 pages.

which allows all the different colours of toner to be added in a single pass of the paper, while cutting down dramatically on the size and weight of the printer.

A popular feature in the modern laser market is 'instant-on' fuser technology and, while the Dell doesn't quite manage this trick, it only took 12 seconds to warm up to operating temperature in our tests, after being left on standby for over an hour. As for print speed and quality, mono and colour pages are outputted at 16ppm and 12ppm respectively, making it noticeably faster than most of its similarly priced competition. First-

page print times were more in line with other budget colour lasers, at around 20 seconds for mono text and colour DTP prints, and 27 seconds for top-quality colour photo output. Text is impressively sharp and rich both for mono and colour documents, and photo output is particularly impressive, with bright, vivid colour and a real sheen applied to prints, even when using standard plain paper.

Running costs for toner work out to \$0.04 per mono page and \$0.20 for colour: a little higher than average. Even the high-yield toner cartridges only have a fairly limited life expectancy of 2,000 pages. But with its robust, stylish design and high quality prints, the Dell 1320c is a definite contender.

Matthew Richards

Brother HL-5270DN

Need a networkable printer for your office?

Brother's HL-5270DN is a networkable 1,200dpi mono laser printer suited to small office or workgroup use thanks to an Ethernet interface as well as the usual parallel and USB ports. The duplexer is a welcome inclusion in these waste-sensitive times.

The silver and grey finish fits in with PCs from the two big vendors.



CONTACT Brother Australia
ONLINE www.brother.com.au
MARKET SMB
PRICE \$699

✓ Carbon copy can print in triplicate.

VERDICT ★★★★★

✗ Memory may need upgrading.

It wasn't appropriate to torture-test the review sample to see if it could withstand rough handling, but the case didn't feel especially robust. The HL-5270DN's dimensions are much as you'd expect for an A4 printer, and the noise levels are subjectively typical for a small laser.

Setup is straightforward, with Flash animations showing what goes where, although the printed Quick Setup Guide has many screen images that are too small and too grey to be easily read. Unlike its Windows counterpart, the Mac OS X installer requires users to manually add a printer — fortunately, Bonjour sees the device. Furthermore, the Mac had to be restarted after installation.

A Linux CUPS driver is available for download.

Nominal print speed is 28ppm. We recorded 21 seconds click-to-drop (including warmup) for the first A4 page, with the second page emerging consistent with the rated speed. If you currently use multipart forms in an impact printer, the HL-5270DN's carbon copy feature automatically prints up to eight copies of each page, with independent control of the paper source for each. Page images (eg. footers, watermarks or logos) can be stored as macros and used to identify each copy. This and other features can be controlled remotely via a web interface. We'd be happy to have this one in our office.

Stephen Withers

HP OfficeJet Pro K5400dtn

More a workhorse than a personal printer.

Positioned as an economical alternative to low-end colour laser printers for workgroup use, the HP OfficeJet Pro K5400dtn includes Ethernet and USB interfaces. Rated at 7,500 pages per month, this is a workhorse rather than a personal printer.

The charcoal and silver finish is quite striking, but it is on the bulky side for an A4 inkjet. Not only is it around 2.5 times the width of an A4 page, it's more than twice as deep as that same page is tall. Some assembly is required: the duplexing mechanism clicks into place at the rear of the main unit, and then the printer must be positioned on top of the auxiliary 350-sheet paper feed tray. The external power pack is an issue for those who like to turn devices off overnight, and while the low-voltage cable is a decent length, the mains lead is less than 40cm long.

The software takes a surprising amount of time to install (especially

CONTACT HP
ONLINE www.hp.com.au
MARKET SMB
PRICE \$399

✓ Solid workhorse; good colour prints.

VERDICT ★★★★★

✗ On the noisy side.

as there are no bundled applications), so be prepared for a tea break once it's kicked off. A related issue is that it takes the best part of two minutes for the printer to initialise after it is switched on. Drivers are included for Windows 2000 and XP, and Mac OS X 10.3 and 10.4. The user manual is supplied as a Windows help file, but can be downloaded as a PDF from HP's web site.

Nominal print speed is 15 ppm for normal-quality colour docs. We recorded 20 seconds click-to-drop (from idle) for the first A4 page, with the second page

emerging eight seconds later. Duplex printing increased the total to 45 seconds. Printing in monochrome draft mode reduced these times to 18 seconds (single-sided) and 26 seconds. Colour printing is vivid, but not excessively so. Business graphics look good on plain paper, though you may want to fine-tune the settings for printing photographs on photo paper.

Stephen Withers



250GB IN YOUR HAND

Western Digital's NEW 250GB capacity WD Passport portable drives fit easily in the palm of your hand or pocket — and come in the fashionably sleek piano-black finish that's all the rage right now. With sync software, it retails for \$299.

www.westerndigital.com



PORSCHE MOBILE

When there's little to technically distinguish their 250GB external drives, hardware makers turn to fashion. Buy LaCie's Porsche Mobile drive and you also get a remote association with the Porsche brand. Price: \$339 (USB 2.0), \$359 (FireWire)

www.lacie.com/au/index.htm



WIRANGER

The world's first wireless USB 2.0 hub, the Icron WIRanger enables wireless connection of USB devices, including printers, scanners, web cams, hard drives and MP3 players. Works over 802.11g and is plug-and-play for Windows and Mac OS.

Price: \$660

www.icron.com/company/company.php



**GREEN ENCLOSURE**

The Welland Greenstar 3.5in hard disk drive enclosure will power down your hard disk automatically when data transfer is complete. This results in decreased power usage and also assists in prolonging the life of your hard drive. Distributed by Anyware Computing, it retails for \$59. www.anyware.com.au

**IPOD CUBE**

The new Icube MP3 player cube has seven docking adaptors to suit a wide range of iPods, but it does more: it can tell you the time and wake you with sound from your iPod or its FM radio. Price: \$99.95 (available from mid-August 2007)

**PHOTO DRIVE**

Canon Australia has released its first media storage device for photographers, essentially an 80GB hard drive with a 3.7in TFT screen to which digital photos can be downloaded from a DSLR camera. The Canon M80 means that photographers no longer need to drag a notebook PC or multiple memory cards to a shoot. Price: \$1,099 www.canon.com.au



Motorola KRZR K3

Slicker than sleek.

The RAZR range from Motorola have become some of the new must-have mobile accessories in the brief time they've been available. With celebrity glitz, diamond- and gold- encrusted models for the very rich, and a slim, sleek finish for the rest of us, Moto has upped the ante in the style stakes for mobile phones.

The new KRZR K3 adds functionality to the image. The K3 includes support for HSDPA networks, A2DP stereo Bluetooth and USB 2.0 via a mini-USB port. This model is finished in reflective metallic and glass, with a bright, clear external screen and a 2MP digital camera.

Its usability has been improved since the last generation, with the

240 x 320 screen noticeably clearer and quicker. Navigating the phone is clean and easy, but you can be hampered by the completely flat keypad, which doesn't let your fingers feel if it's centred on a key. There's no headphone jack for handsfree or the supported MP3 and AAC music playback, so you're limited to using a Bluetooth headset only. A2DP allows stereo streaming of music, so you're not going to miss out on much quality there.

Measuring in at 102 x 42 x 16mm, with a mass of just over 100gm, the K3 is slim and light, fitting easily into a pocket or purse. The new extra ledge under the keypad adds some bulk visually but doesn't detract from the usability of the phone.



Battery life on the K3 was good, with a standby time of nine days with intermittent talk, but use of the HSDPA 3.6MB modem started chewing through the battery noticeably with a few hours' use.

Our overall impression of the handset is that it's a well-designed piece of engineering, with few negative points; Motorola is doing good things. If you're sold on HSDPA, then the KRZR K3 is a phone to seriously consider.

Nick Race

• CONTACT Motorola
• ONLINE www.motorola.com.au
• MARKET Everyone
• PRICE \$654 through Optus

✓ Sleek design; snappy; battery life.

• VERDICT ★★★★★

✗ Flat keypad takes getting used to.

HTC Touch

Windows Mobile's answer to the iPhone?

The Touch is one of the first HTC-branded smartphones to make it to Australia, and what it lacks in high-end features (like GPS and 3G/HSDPA support), it makes up for in design. The black, stylishly slim physique has a rubberised finish that's soft to the touch, and the small, pebble-shaped form factor sits comfortably in your hand or pocket.

There are dozens of touchscreen-enabled smartphones on the market — the difference with this one is its use of HTC's TouchFLO technology. Sweeping a finger up the 2.8in display brings up a virtual 3D interface that lets you call or SMS a contact, launch commonly used applications and access your multimedia library — all through large, finger-friendly buttons.

Once you've launched the relevant contact or program, however, you're dumped back into the regular Windows Mobile 6 operating system. Nothing wrong with WM6 per se, but after using the groovy TouchFLO interface to launch applications, it's a let-down having to then grapple with the stylus and minuscule on-screen keyboard.

The Touch has immense appeal for anyone looking for the features of a smartphone (like push email, Office compatibility and Wi-Fi) without the bulk that usually comes with one, but the under-powered processor, a 201MHz TI OMAP850 chip, is only adequate for running one application at a time — with a few programs running



simultaneously, the system slows to a crawl.

The upside is battery life. The 1100mAh cell (and slow processor) extends run-time to five hours of talk time and eight days of standby time.

Jenneth Orantia

• CONTACT Optus
• ONLINE www.optus.com.au
• MARKET Everyone
• PRICE \$699

✓ Affordable; touch features.

• VERDICT ★★★★★

✗ Slow; still need stylus.

OQO model 02

A pint-sized portable with the full power of Windows.

Ultra-mobile PCs, what are they good for? The popular consensus to date has been 'absolutely nothing', but now that vendors have had over a year to get the formula right, the latest breed of UMPCs may very well put paid to that perception.

The OQO 02 is one such device: a paperback-sized UMPC that's billed as the world's smallest Windows Vista PC. As far as machines of this size go, the specs are impressive. It's powered by a 1.5GHz VIA C7M ULV chip, with 1GB of DDR2 SD RAM (533MHz FSB), a 1.8in 60GB 4,200rpm hard drive, 802.11a/b/g WLAN and Bluetooth 2.0 with EDR. The US version also has a built-in EVDO WWAN module, but this has been excluded from locally available units.

Like most tablet PCs, the OQO 02's screen uses an active digitiser, but, oddly, there's no integrated silo to stash a stylus in. Nor does

the flagship version of the device (with Windows Vista Ultimate installed) come with a stylus — you'll have to buy one for \$79.95 or opt for the Windows XP Tablet PC Edition version.

Not that you'll miss the stylus in day-to-day use. The slide-down thumbboard has a built-in track pointer on the right-hand side and two mouse buttons on the left — a combination that works extremely well when holding the device with two hands. The keys are also a pleasure to use, with good tactile feedback and a bright backlight, but the thumbboard's width makes it better suited for quick edits than for extended typing.

The front of the OQO 02 is taken up almost exclusively by the vibrant 5in display. This runs a native resolution of 800 x 480, which is low by notebook standards but ideal for the screen size. You can bump the resolution up

to 1,000 x 600 and 1,200 x 720 using the zoom keys on the thumbboard — these views are interpolated (similar to the digital zoom on a camera), but text is clear.

Contrast and brightness on the display are great, but viewing angles are poor. This puts a damper on its use as a portable media player (and this is not helped by the weak, tinny speakers).

Unique to the OQO are capacitive touch scrollers along the bottom right-hand edge. Dragging your finger along the vertical pad scrolls through long web pages and documents, while the horizontal pad does the same for sideways scrolling.

Ports on the OQO 02 are minimal. In addition to a single USB 2.0 port, it has a dock connector, HDMI port, Kensington lock slot and 3.5mm earphone jack. The dock connector can accommodate the power cable directly or through a dongle that also includes VGA and Ethernet ports. A docking station with a rotatable stand, optical drive (CD-RW or DVD-RW) and extra ports is available separately.

Performance was on par with the OQO's modest specifications — nothing exceptional, but adequate for basic tasks like email, word processing and web browsing.

It doesn't take much to get the OQO's fan whooshing, though, and despite it having vents on three sides, the base does get warm to the touch.

The OQO 02 is the sort of device prized by hardcore road warriors for its portability, wireless connectivity, and ability to run Windows, but long battery life is usually essential, and this is where the OQO 02 fails to measure up. Using it to browse the internet over Wi-Fi, we were only able to get an hour and 45 minutes of run-time on the standard 4500mAh battery before it shut down — a shortcoming that limits its practicality as a mobile workstation.

Jenneth Orantia

HIGH SPEED DOCK

Belkin's new High Speed Docking Station provides an easy docking service for notebooks with an ExpressCard slot, into which a user can plug devices and peripherals. The ExpressCard slot connection is four times faster than USB. Price: \$349.95 www.belkin.com/highspeeddock/



MOBILE SPAM

Security company AVG wants to fight the new scourge of SMS spam with an antispam product for mobile phones. The AVG Mobile Security software can be currently downloaded as a beta and protects Symbian UIQ 3.0 platform mobile phones, as well as Sony Ericsson P990i, M600i and W950i devices. www.avg.com



COMPLETE COLLECTION

The Adobe Creative Suite 3 Production Premium (\$4,455) packs together tools for video pros for delivering content for film, broadcast, DVD, web and mobile devices. Adobe Creative Suite 3 Master Collection (\$3,025) is a package of 12 of Adobe's design and development applications. www.adobe.com/creativesuite



CONTACT Tegatech
ONLINE www.tegatech.com.au
MARKET Everyone
PRICE \$2,249

✓ Portable; built-in thumbboard.

.. VERDICT ★★★★★

✗ Weak battery life; loud fan.

**COLOUR SHOT**

Colour laser printers are now available for not much more than the price of inkjets a year ago. Canon has just released its new LASER SHOT LBP 5100, which prints 10 colour prints per minute and also includes auto duplexing. Price: \$599

www.canon.com.au

**BIZ COLOUR**

The business version of the Canon LBP 5100 is the LBP 3560, which does 21 prints per minute and connects to the office network. Price: \$1,999

www.canon.com.au

**TRACKING CAM**

The Pro-Q Motion-Tracking Webcam has tracking motors that follow the subject's every move, by enabling the camera to turn 180 degrees horizontally and tilt 60 degrees vertically. Distributed in Australia by Anyware Computing. Price: \$89

www.proq.com.tw



◀ The space saved on buttons has been put to good use; the 7in screen has barely any edges to it.

CONTACT iTech International
ONLINE www.ittechinternational.com
MARKET Everyone
PRICE \$1,049.95

✓ 7in TFT touchscreen.

.. VERDICT ★★★★★

✗ Touchscreen digitiser.

Archos 704 Wi-Fi 80GB

Does away with complex controls, but still less than perfect.

Archos' rise through the ranks of gadget purveyors has been heartening to see. Gadget historians will surely remember the company's first device, which was little more than a huge hard drive coupled with a tiny screen. Grainy video playback on the move was a revelation, albeit an unwieldy one, but the market (which also included Creative's monstrous Zen Jukebox) wasn't exactly flush with svelte media players at the time.

Fast-forward to now. Everything is small. There are a hundred companies making devices which play back video. Archos has released a number of market-leading players, but the majority failed on one particular point: the controls. Or, more specifically, the huge number of them. This latest incarnation, however, does away with physical buttons in favour of a touchscreen.

The interface is well-presented, with nice-looking icons and controls, perfect for jabbing with a finger. Unfortunately, that isn't actually an option. For some reason, the touchscreen only responds to pinpoint touches. Press the fleshy tip of your finger onto a control and your touch will simply not be recognised; carefully angle a long fingernail (or use the stylus),

and you might have a bit more luck. Clearly, control still baffles Archos; there are calibration issues too. Most seriously, the calibration once managed to slip so far that a click in the centre of the 7in screen registered at the bottom. For all its flaws, this remains a better control system than previous efforts, but Archos' work-in-progress attitude has to stop now.

WIRELESS PLAYBACK

Time for the redeeming features. The Wi-Fi mode is absolutely brilliant, and far less clunky than we'd imagined. There's web browsing, albeit in a limited flash-free capacity, thanks to Opera's brilliant browser, but it's streaming that gets the most accolades. As long as you've set up a shared folder on one of the machines in your network, the 704 can wander on and find any files you've shared. No need to set up any fancy streaming servers, no need to transcode your video, just straight-up folder access to your networked media. This compensates very nicely for the relatively small hard drive that Archos has chosen to include, and SD video plays absolutely flawlessly over the airwaves.

On the plus side, watching movies on the 704 is a distinct

pleasure. The screen is larger than most, and your videos can be neatly upscaled to fit the screen, or cropped if they're 4:3 formatted. The refresh rate is decent, with little of the blurring that you can see on some smaller screens, and there's a huge variety of formats natively supported by the unit. And that lack of buttons means the screen has been allowed to bleed all over the unit; there's none of the extra case size that chunkier units demand. It's thin and neat all around.

Also, the 704 features a hinged stand on the back of the unit so that it can be stood up, although the screen isn't fantastic at extreme angles, so its lack of potential adjustment may hurt. And why Archos couldn't find the room to include a stylus slot in the unit is pretty unfathomable — there's a little pocket in the soft case that comes included, but it smells like an afterthought to us.

MISSING DOCK

Spend a little more money and you can increase the versatility of the unit with a dock, so you can attach it directly to a television for network-streaming video — or to an analogue TV signal for recording purposes.

Alex Cox



Sonic Version VGA Cards



With pre-overclocked memory and core clock, it allows the enthusiasts to enjoy outstanding performance.

DirectX® 10

The DX10 GPUs feature a powerful unified architecture that delivers an incredibly true-to-life gaming experience.

HDCP Capable VGA Cards

Designed to meet the output protection management (HDCP) and security specifications of the Blu-ray Disc and HD DVD formats, allowing the playback of encrypted movie content on PCs when connected to HDCP-compliant displays

The Revolutionary Cooling System

Combines both the silent advantage from the heat sink and the thermal conductivity advantage from the fan, allows the GPU stays in a cooler environment.



HD2900XT

512MB 512bit GDDR3
DirectX10 support
Dual Dual-link DVI support
HDMI support



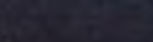
HD2600Pro Sonic

256MB 128bit GDDR3
Memory/Core speed: 1400/600 MHz
DirectX10 support
Dual-link DVI support
HDMI support



HD2400Pro Sonic

256MB 64bit DDR2
Memory/Core speed: 800/600 MHz
DirectX10 support
Dual-link DVI support
HDCP support



**DELL VOSTRO**

Finally, vendors are removing the rubbishware that comes packed with new PCs. Dell's new Vostro desktops and notebooks come trialware-free. Aimed at small business, Vostro also includes automated support tools designed to help offices with no IT staff, such as Dell Automated PC Tune-Up, Dell Network Assistant and 10GB of online backup space. Price: from \$800

www.dell.com.au

**BOOST VISTA**

Apacer's Handy Steno AH421 is a USB flash drive created specially for Vista's ReadyBoost function. It comes in a notebook-friendly blade-shaped design that can swivel 180 degrees so it doesn't block other ports.

<http://ap.apacer.com/>

**MORE FOR GAMES**

ASUS has released the PG221 LCD 22in wide-screen monitor for gamers. It can connect to a personal computer and with the various multimedia inputs including VGA, DVI, composite, S-Video, component (YPbPr, up to 1080i/p) inputs, and USB2.0 ports it supports everything from HD DVD players and video game consoles to karaoke boxes and digital cameras and camcorders. Price: \$720

www.asus.com.au



Canon HV20

HD is in the house!

The era of high-definition home video has definitely arrived. Consumers can now purchase a HD-quality camera for the price that a standard VHS camera cost a few years ago.

With inbuilt image stabilisation paired with a horizontal body design, the HV20 gives a professional feel to the finished product as well as resulting in more stable images. Its compact size is an added bonus as, although still solid feeling, the HV20 will not leave you with a tired arm and cramping fingers after prolonged use. The only negative issue we can think of is the poor placement of the zoom control, which is situated a little too far back on the camera for comfortable use.

CONTACT	Canon
ONLINE	www.canon.com.au
MARKET	Everyone
PRICE	\$1,998

With a 3-megapixel, 1/2.7in CMOS sensor that captures 1,920 horizontal and 1,080 vertical pixels for either 1080i high-definition or wide-screen standard-definition video, we were surprised at what great results can be achieved. We honestly didn't expect to see such strong clear images from such a low-priced, compact unit.

With Instant Auto Focus, the subjects appeared crisp and sharp. It works well under bright conditions, but can get a little confused in low light and when zoomed out to its 10x maximum.

The HV20's colour handling is another bonus. Rich, vibrant colours fill the screen with very

✓ Great image quality at a great price.

VERDICT ★★★★★

✗ Awkward zoom placement.



little noise. The saturation in daylight conditions is absolutely amazing, though it does tend to suffer in poor light.

A new function that impressed was the ability to simulate a 24 frames per second frame rate used in film. With the cine mode activated, the look and feel of a big screen movie can be reproduced for the budding Spielberg. Although not up to professional standard, this still gives good results for the amateur.

With only a few performance issues in low light and at maximum zoom, the HV20 performs well. With fantastic images and amazing colours, the HV20 will suit most users.

Christopher Zammit

Samsung CLX-2160

Colour laser MFC for under \$800.

Colour laser printing is often a very expensive exercise. Only in the past three years has the price dropped into the realm where personal users would consider it as an alternative to ink-based printers. Combined with the increase in popularity of multi-function devices for home use, vendors have been working hard to combine the two into a solution that Joe S. Computer-User would consider having in the house.

CONTACT	Samsung
ONLINE	www.samsung.com.au
MARKET	Everyone
PRICE	\$799

✓ Tiny form factor; decent speeds.

VERDICT ★★★★★

✗ Colour prints are spotty.

Samsung's colour laser miniaturisation, first seen in the CLP-300 model, has been given a whole new swathe of functionality. The CLX-2160 uses the same small engine, but adds scanning and copying functionality with a top-mounted scanner bed. The printer

measures 413 x 353 x 333mm (slightly more with the paper tray out the front), but really, it's a dramatic reduction in size for an MFC.

In testing, the CLX-2160 went fairly well. The print functions performed as expected, with

good-quality text output, and not-so-fantastic colour image output. Our photo test target came out looking grainy and banded, but this isn't unusual for colour lasers. More importantly, our text output mixed document test completed in eight minutes, 20 seconds from click to drop, with the quality coming out great — this is a home office rather than photo printer.

Scanning was reasonably snappy: good colour reproduction and no issues to speak of with the included software. Copying was a slower process, with average results. For a low-cost, do everything device, the Samsung CLX-2160 is a good consideration. Text prints are good, and you can get by with the colour reproduction.

Nick Race



Nitro PDF Professional

Everything you need to Create, Convert and Edit PDF files.

Create PDFs

Convert PDFs Back to Microsoft® Word

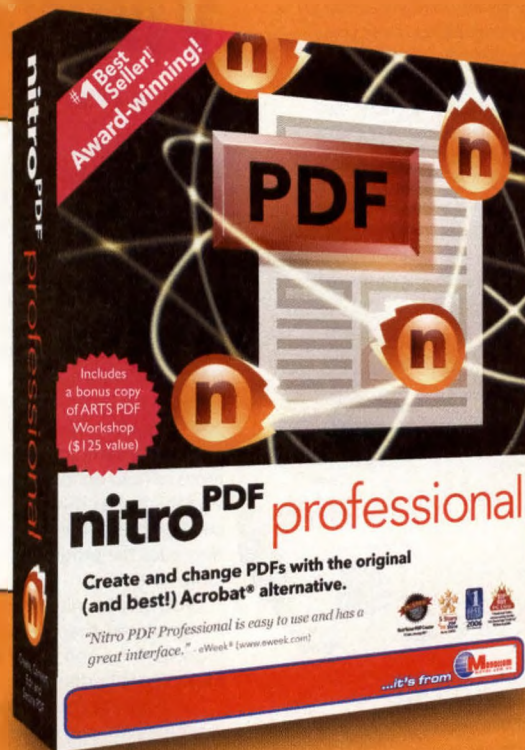
Create Presentation Ready Documents

Apply Powerful Security

Edit Freely

Review Documents Electronically

Windows
Vista
Compatible



Create and change PDFs with the original (and best!)
Acrobat® alternative. RRP \$199.95

Feature Comparison*

	Nitro PDF Professional	Scansoft PDF Converter 4 Professional	Adobe Acrobat 8 Standard
Fully featured PDF creation including security	✓	✓	✓
One-click creation from Microsoft Office	✓	✓	✓
Drawing and markup tools	✓	✓	✓
Automated Bates number stamping	✓	✗	✗
Advanced document assembly and disassembly	✓	✗	✗
Advanced bookmark generation	✓	✗	✗
User-friendly Microsoft Office 2007 style interface	✓	✗	✗
Tabbed and split document viewing modes	✓	✗	✗
Automatic link generation	✓	✗	✗

* All information accurate as of 9/2/2006. This chart is a subset of features and is not exhaustive.

Available at the following retailers...

Officeworks

LEADING EDGE

Harvey Norman

JOYCE MAYNE
WHERE THE SMART MONEY SHOPS

JB Hi-Fi

harris technology

DOMAYNE

DICK SMITH
ELECTRONICS

For volume license sales please call (07) 3331 5937 or email nitropdf@manac.com.au

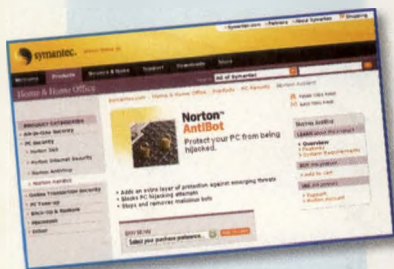
...it's from **Manac**
manac.com.au

**EPSON PROJECTORS**

Virtually everything released these days highlights its green credentials, even projectors. Epson's new range of LCD multimedia projectors for the home, education and business markets — the EMP-S5, EMP-X5, EMP-83 and the EMP-822 — highlight their low operating power consumption of 231 watts and a standby consumption of 5.8 watts. Price: from \$1,199 www.epson.com.au

**ANTI ZOMBIE**

If it's bad for your PC, it's good for internet security companies. Symantec has just announced Norton AntiBot, designed to rid consumer PCs of bots (which steal personal identity and turn PCs into zombies). Price: \$39.95 www.symantecstore.com/au

**GAME SWITCH**

You can now play PS3 on a DVI monitor with Gameswitch, a KVM switch that should be available this month from KVM Australia. It allows switching of a PC and a PS3 to the same monitor, and supports resolutions from 480i to 1080p. www.kvm.com.au



VMware Workstation 6

The virtualisation market is tough — but this can take it on.

VMware has provided the ideal virtualisation tool for just about everyone, so if you're a developer who needs to test applications on versions of Windows, a PC enthusiast interested in security, or just a regular home user who wants to run old XP applications under Windows Vista, this could be for you.

With both Microsoft Virtual PC 2007 and VMware Server now free, Workstation has to offer significantly more to hold on to its market share. And this makes this latest release perhaps one of the most important upgrades the program has had for a long, long time.

You may be initially disappointed, then, to launch Workstation 6 and find it actually looks virtually identical to version 5.5. But start to create a new virtual machine (VM) and some very useful improvements become apparent.

There's now full support for Windows Vista, for instance, both as a host and guest operating system. And if you tried the Workstation beta and were disappointed with its Vista performance then you can relax, because the release version runs it at much improved speeds. VMs now fully support USB 2.0, and not before time. And the old limit of 4GB RAM that could be allocated for all your VMs has now been removed. Each individual VM can have up to 8GB of RAM, and the total of all of them is limited by the host PC's RAM and swap file size.

CONTACT VMware
ONLINE www.vmware.com
MARKET SMB
PRICE US\$189

✓ Flexible; Vista support.

VERDICT ★★★★★

✗ It's not cheap.

You can still configure every aspect of your VM's hardware, and there's direct support for installing a wide range of operating systems including Windows, Linux, Netware, Solaris and more. It's all very impressive, and once your VM is up and running, things only get better.

One key advantage of a VM is that it's isolated from the host. (Browse the internet in one, and get infected by malware, say, and the host PC is relatively safe.) But at the same time, it's useful to be able to share data with a VM, and in Workstation 6 it's become easier than ever. You can now cut and paste, text or drag and drop files between the guest and host, even if they're running different platforms. Shared folders now work on Solaris guests, and it's even possible to directly map a virtual drive to a drive letter on the host PC.

The shared folders feature on a Linux guest has been overhauled, too, and is significantly faster.

VMware quotes performance gains of 'up to 40 per cent', depending on usage.

Interestingly, you can now even allow your VM to be shared over the network (or even the internet) by allowing something VMware calls the Remote Display. This effectively turns your VM into a VNC (Virtual Network Computing) server without any further software, allowing any VNC client to access it remotely.

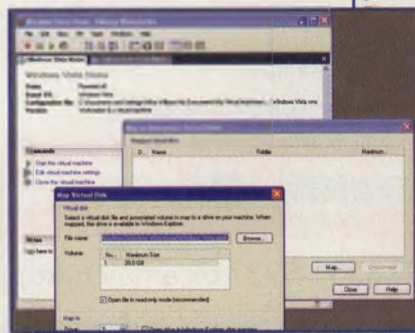
Workstation 6 delivers a useful new feature for developers, providing direct integration with Visual Studio (Windows only) and Eclipse (Windows and Linux). The new support for multiple monitors is welcome, too (up to 10 displays).

And if all this seems like it's aimed at PC experts, don't worry, because there are small but effective improvements here that everyone will enjoy. There's more than enough here to justify the existence of Workstation 6. If you only need to run a few old Windows programs on a Vista system, you can probably get by with Virtual PC 2007. But if you're doing anything more complex, or need decent performance and good VM configurability then Workstation 6 remains the best game in town.

Mike Williams



Map a virtual drive and browse it in Explorer, without a virtual machine.



Run Windows Vista on your XP PC — just one of the things you can do with Workstation 6.



Starry Night 6

Explore the galaxy without removing your slippers.



Space seems to have gotten bigger in recent years. Literally — because current theory suggests it's eternally expanding — and, figuratively, as more of the world becomes enamoured with the great beyond. Some of the internet's most brilliant blogs, along with the 50th anniversary of The Sky at Night, mean that astronomy software — while remaining a bit of a niche market — has an increasingly wide following. Starry Night, now in version 6, has plenty to attract even those with a passing interest in astral and planetary bodies.

The Complete Space and Astronomy Pack (CSAP) is the entry-level package in the Starry Night stable, and more expensive editions include the Enthusiast, Pro, AstroPhoto Suite and Pro Plus, which include more extensive star catalogues and refinements, such as computer control of a telescope.

The package comprises three separate discs: a DVD called SkyTheater, which contains a series of short movies covering different aspects of the solar system; the Starry Night Companion, a PDF book on CD providing a lot of useful astronomy tuition; and the program itself, Starry Night 6, which is an interactive night-sky viewer.

Before you start using Starry Night, you need to enter your

• **CONTACT** Imaginova
• **ONLINE** www.starrynight.com
• **MARKET** Everyone
• **PRICE** US\$24.95

✓ Great piece of software.

• **VERDICT** ★★★★★

✗ Prices of additional modules.

location in longitude and latitude, or you can pick from hundreds around the globe. You can also pick a panorama, such as a lakeside scene, grasslands with hills in the background or a mountain view, above which the correctly positioned sky is displayed. This is to give you some way of locating into the star field and also so that the positions shown on screen relate directly to what you see in the sky through your backyard telescope.

The view you're given is correct not only for your global position, but also from the time of day. This doesn't mean you can only use the program at night, though, because you can run its internal clock forwards or backwards to any point in the past or future, to see how the starscape would look.

Although you can get plenty of information about virtually any body you point your mouse pointer at, there's lots of extra information about the planets and moons in our own solar system. Each has its own special coverage, and the information about the moon, in particular, seems pretty exhaustive. There's special treatment of its history, full 3D rotations of the satellite, footage

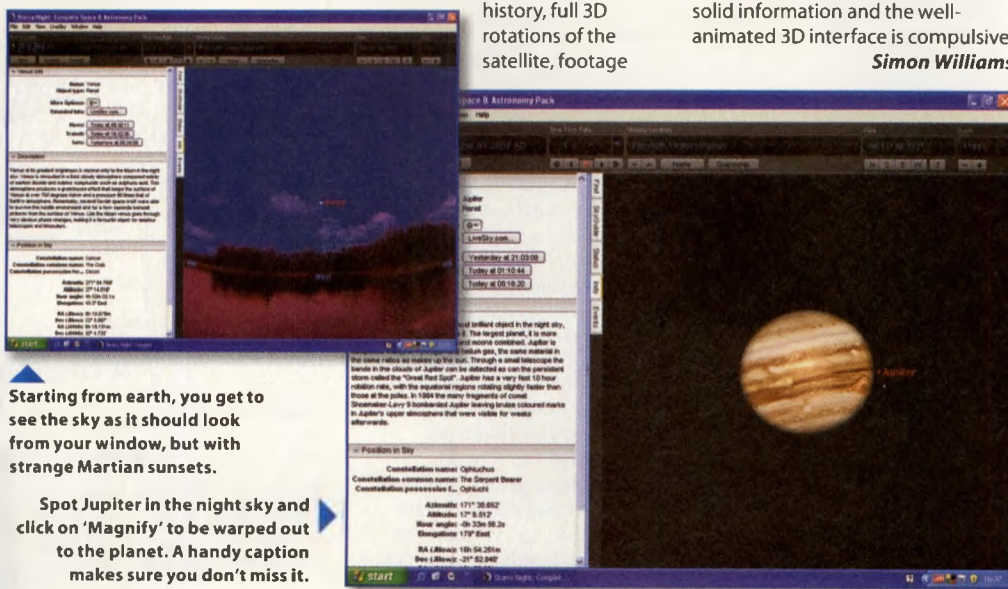
from one of the Challenger moon landings and details of possible sources of water, which may help future colonisation.

Click on any of the solar system bodies that are viewable in the sky and you can magnify them, which is like a condensed spaceship trip, with the planet zooming into view, like a clip from *Star Trek*, but scientifically accurate (you mean *Star Trek* isn't?). Once you get there, the photographically accurate image of the particular planet or moon becomes a map in itself, and legends from the mouse pointer say things such as '319km south-west of Romanskaya, crater' (that's Venus).

As well as the 'local' planetary bodies, there are millions of stars and thousands of galaxies to look at, and Starry Night helps by identifying constellations and providing plenty of information on each star. This information is updated online each time you start the program, and there are plenty of links to other sources of astronomical data.

Starry Night 6 CSAP is a great way to encourage an interest in the planets and other celestial bodies. The combination of sound science, solid information and the well-animated 3D interface is compulsive.

Simon Williams



Starting from earth, you get to see the sky as it should look from your window, but with strange Martian sunsets.

Spot Jupiter in the night sky and click on 'Magnify' to be warped out to the planet. A handy caption makes sure you don't miss it.

W25 FIXED WIRELESS TERMINAL

Have no fixed phone line? You can still get access to 3.6Mbit/s broadband, phone and fax services with Ericsson's new W25 Fixed Wireless Terminal (FWT) which uses the 3G HSDPA network. Stick your SIM card into the terminal, plug your phone into it, and it will send all calls over the mobile network, billing usage at mobile rates. Price: \$1,311 www.powertec.com.au.



FLYTV EXPRESS X1

We reviewed the FlyTV M5 ExpressCard TV tuner last month — but we've since discovered there's also a PCI Express (PCI-E) version that takes advantage of the bandwidth of the PCI Express (PCI-E) interface. The FlyTV Express can generate up to four simultaneous video streams. Price: \$239.95 www.gdbint.com.au



FILEMAKER

FileMaker Pro 9, a major new version of the Mac and PC desktop database includes new features to simplify creating, automating, sharing and reporting from databases, including live two-way connections with SQL databases and conditional Formatting (which highlights data based on parameters the user sets). Price: \$453.64; upgrade \$271.82 www.filemaker.com.au



**BLUEANT INTERPHONE**

Blueant's wireless headset connects to a Bluetooth-enabled mobile phone up to 10 metres away. Or it can function as a bike-to-bike intercom on motorbikes up to 150 metres apart.

Price: \$249

www.blueant.com.au

**NO DUST K100D SUPER**

We reviewed the Pentax K100D last month but a reader pointed out to us the extreme lengths to which Pentax has gone to prevent dust from getting onto its CCD image sensor. This has a special non-stick coating, combined with a system that shifts the CCD at high speed! Any dust shaken off the CCD will then fall onto an adhesive sheet. Price: \$1,400

**CABLE SCANNER**

A cable tester allows network cabling technicians to pick up cable problems during installation or troubleshooting. Fluke Networks' new MicroScanner2 can now show visually the length, wire map, cable ID and distance to break or short.

www.flukenetworks.com



Miro 0.98

Have you discovered internet TV yet? Make it easy with Miro.

Miro, formerly Democracy, is a little hard to explain at first — think YouTube in a media player with built-in searching and promotion of hundreds of channels, and all with files transferred using BitTorrent. Not clear yet? How about a culture-driven video-based RSS aggregator?

Actually, let's stick with internet TV, only the content comes from people like me and you. And there's a lot of it. From the amateur productions to the seriously professional, and it covers everything from entertainment to education to music and more. And there are over 1,500 channels to choose from, where each channel

can contain multiple episodes of a running show, or mixed content if the channel is an umbrella for a particular interest. To help you find content of interest, a program guide acts as your main interface to search and explore the huge volume of content on offer.

And what does that content look like? Just a few minutes exploring brings up channels like Hak.5 (geeks being geeks), Man and Wife (relationship advice), French Maid TV (oh la la!), Ask A Ninja (haven't you always wanted to?) and High-Definition Movie Trailers. Then, there's the video blogs and, as an RSS aggregator,

• **CONTACT** Miro
• **ONLINE** www.getmiro.com
• **MARKET** Everyone
• **PRICE** Free

✓ Excellent interface and aggregator.

• **VERDICT** ★★★★★

✗ Binary packs only Ubuntu/Fedora.



Miro will allow you to tag them as favourites and have new entries downloaded automatically.

Miro encourages you to leave it open all the time, not only to download your favourite shows on demand when new episodes pop up, but also because it uses BitTorrent to share the volume of video data among all users of Miro — and indeed this is an excellent use of the tech, as it allows anyone to publish their own videos and rely on the bandwidth of the masses.

Like a TiVo, Miro can save your disk space and delete old videos or you can elect to keep favourites, and you can vote for your favourite channels and pass them on easily to friends.

Ashton Mills

Pidgin 2.0.2

Popular Linux instant messenger gets some big updates.

GAIM is, without a doubt, one of the most flexible and powerful instant messaging programs for any platform — remembering it's available for both Linux and Windows. For some time now, however, there's been a bit of murky ground over its name. GAIM started as a Linux client for the AOL instant messaging system, hence the name (GTK+ AOL Instant Messenger). It quickly grew to support a wide range of protocols, but retained the name. AOL eventually trademarked AIM (AOL Instant Messenger) and, as a result, pressured the developers of GAIM to give up the name. After a lengthy struggle they did just that in April this year — and Pidgin was born.

The good news is it allowed the program to move forward, since previously one of the agreements made to AOL to prevent a major infringement was to never actually

• **CONTACT** Pidgin
• **ONLINE** pidgin.im
• **MARKET** Everyone
• **PRICE** Free

✓ Has everything you need.

• **VERDICT** ★★★★★

✗ No Mac OS X version yet.

release a final version, which is why GAIM was in a perpetual beta.

As a result Pidgin 2.0.2 is the best, well, GAIM yet. Supporting AOL, ICQ, MSN, Jabber, Gadu-Gadu, Zephyr, OpenNAP, Novell GroupWise and even IRC, it's a one-stop shop for all your instant messaging needs. Another strength of Pidgin is its extensible plug-in system, which allows you to tailor messenger functionality or add new features. Notable plug-ins include Buddy State Notification, Mouse Gestures, Contact Availability Prediction (statistically analysing the availability of your buddies), Offline Message Emulation and the rather interesting Psychic Mode (pops up a window the moment a buddy messages you).

Additionally, Pidgin allows you to set up chat groups for communication with a number of buddies 'in the same room' simultaneously and, of course, features full file transfer capabilities.

Finally, tray support for Gnome and KDE is standard, and as above comes in versions available for Windows as well as Linux, so you can use it regardless of platform.

Ashton Mills



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LCD VS PLASMA

CONTENTS

- 47** Where the differences start
- 48** LCD's have higher resolution than plasma
- 49** Plasmas have darker blacks
- 50** Plasmas are better at showing sport
- 50** Plasmas have better viewing angles
- 51** Plasmas can suffer burn-in
- 51** Plasmas don't last as long as LCDs
- 52** Plasmas consume far more power than LCDs
- 54** Viewing scenarios
- 57** The Conclusion

We explode the myths of the competing HDTV technologies

High-definition television's time has come. The world's two biggest sporting events, the Rugby World Cup and the Beijing 2008 Olympics, will be broadcast in high definition. Blu-ray and HD DVD players are now finally making movies available in the 1080p format. And when you've built a home theatre, you want to see your movies streaming on a high-def screen, rather than a computer monitor.

But you can't buy a high-definition TV without first answering the big question: LCD or plasma?

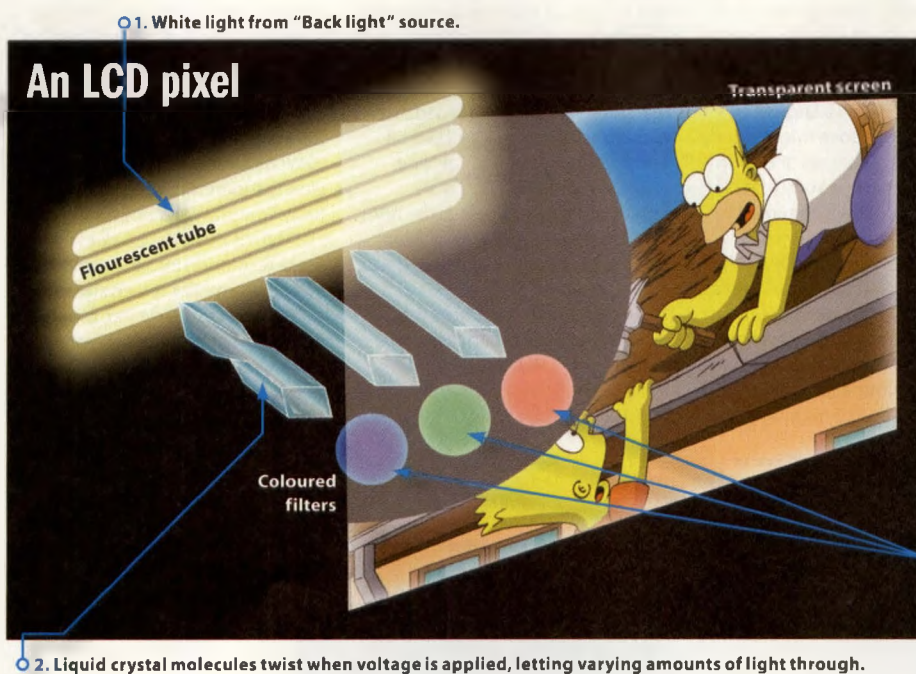
In this special, we gathered some of the newest LCD and plasma televisions from the big manufacturers, lined them up in our Labs and assessed the claims and counterclaims that the LCD vs plasma debate has generated.

Our conclusions bust many myths and prove some others.

HDTV — The basics

Where the differences start

The unique qualities of plasma and LCD all spring from their very different properties at pixel level.

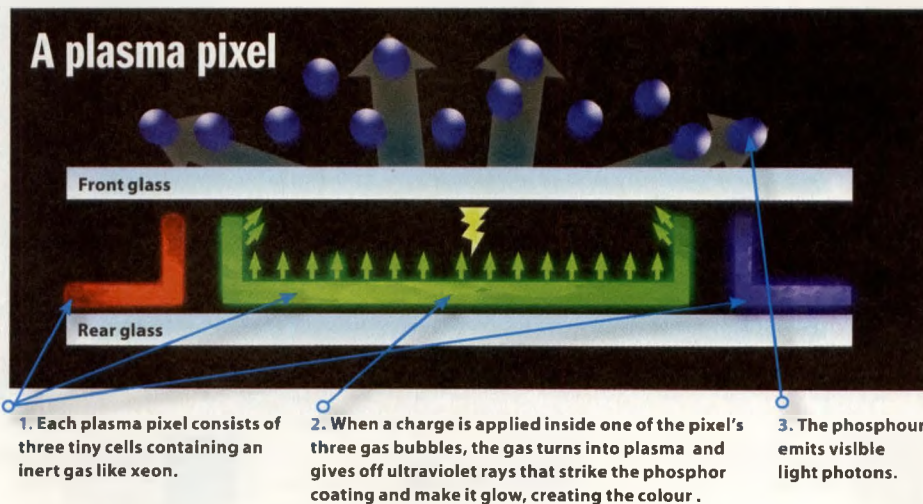


LCD screen

LCD technology fundamentally shines a backlight through a layer of liquid crystals which twist to block or let the light pass in order to create an image on the screen. In effect, the voltage changes their polarisation — the amount of light allowed through determined by the voltage applied to the crystals. The pixels on an LCD can be made smaller than plasma pixels. It's this quality combined with the backlight that gives LCDs their strong brightness and crisp, clear images. It's also the reason LCDs struggle to match plasmas in blacks and contrasts (and still are not as good at handling motion blur).

Plasma screen

A plasma screen contains millions of tiny cells, each filled with a mixture of xenon and neon gases. Each of these cells creates a pixel on the screen. The cell is actually divided into three sub-cells, with red, blue and green phosphors. When a charge is applied to the gas inside each tiny cell, the gas turns into plasma and causes the phosphor coating to glow in its colour. The light emitted by all three phosphors combines to create the pixel's colour. The constant lighting of the plasma over time will eventually reduce the gas's effectiveness.





HDTV — Myth 1

LCDs have higher resolution than plasma

LCDs generally have more resolution than similarly sized plasmas because they can cram more pixels into a given space. The smallest plasmas currently on the Australian market that can display full 1080p resolution are 50in (127cm) sets. The smallest LCD to do that is 37in (94cm). Mid-size plasmas supporting full 1080p have already started to appear on the market, however.

The problem of comparing plasma sets with LCD sets just by their resolutions is that a TV's native resolution is only half the story. You need to consider the resolution of the content that you'll be watching on the TV. The highest HD resolution is 1080p, also known as Full HD. It's available on several LCD TVs and a few higher-end plasmas. But you'll

only see the maximum resolution on a 1080p screen when you feed it original 1080p content. Television networks don't broadcast at such a high resolution. The only available 1080p content comes on Blu-ray or HD DVD discs, and you'll need a Blu-ray or HD DVD player to view it. Another complicating factor is that 1080p resolution on a large LCD panel of 50in or above may magnify some of the weaknesses of LCD. In our tests we placed a Sony Bravia KDL52X2000 1080p 52in screen alongside Panasonic's newest plasma TV, the Viera TH-50PX70A with 1,366 x 768 resolution. From a distance the Sony looked great, but from two metres away we had to remind ourselves that the Sony was of higher resolution, primarily because it tended to magnify

imperfections and film artefacts in our test movie, *Apollo 13*.

In general, you won't get your money's worth if you buy an expensive LCD or plasma 1080p set just to watch TV. Closer to the native video formats of TV broadcasts are cheaper HDTV sets with 1,920 x 1080i native resolution, which matches the native HD broadcast resolution of Ten and TAS Digital, and the horizontal lines of Nine (1,440 x 1080i), WIN and NBN. Similarly, if all you watch is the ABC, which broadcasts in 1,280 x 720p HD, a 720p TV will give you as good a picture as any.

It must be stressed here that, regardless of the broadcast signal resolution, all HDTVs at the four main resolutions (720p, 768p, 1080i and 1080p) will rescale the signal to

make it fit the screen. When the source material is lower definition, the TV's processors use algorithms to remap the image to a larger resolution, filling in the gaps. As dodgy as this sounds, it can make even an ordinary SD signal look smoother and higher resolution on an HD screen. Standard television on the 32in 1,366 x 768 Philips 32PFL7532D and Toshiba's new 32in 32WL68A panels in our Labs was clearly superior to that on our test Sony Trinitron SD dinosaur.

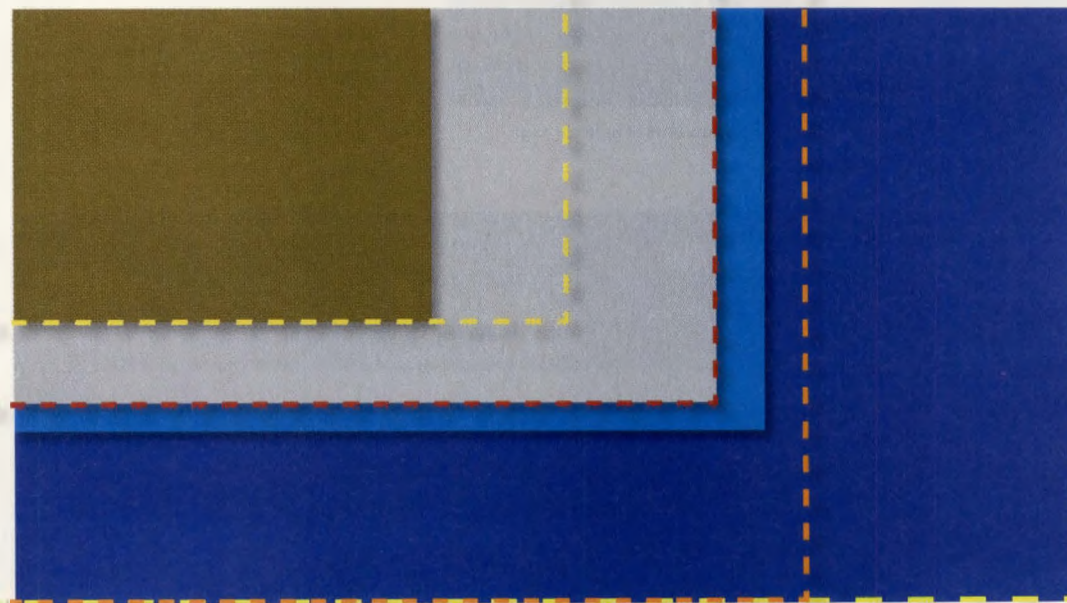
Myth is busted: LCD *does* pack more resolution into the same-sized screen. At smaller screen sizes, it seems to offer the clearer, crisper image. But at higher sizes, some of the harshness and duller contrasts of LCDs tend to be magnified. At 50in or above, we'd rather watch plasma.

SBS, 7 and Prime
HD signal.
1,024 x 576

ABC HD signal.
1,280 x 720

Nine, WIN, Southern Cross
Ten, some Ten and NBN HD
signal. 1,440 x 1080i

Ten, TAS Digital HD signal.
1,980 x 1080i



The colour blocks show the native resolutions of TV sets, from standard-definition TVs to HDTVs. The striped boxes show the HD broadcast resolutions. You can see that, except for the ABC HDTV 1,280 x 720p and the Ten and TAS Digital 1,920 x 1080i signals, the TVs have to rescale the HD broadcasts.

Standard definition 4:3 TV
768 x 576

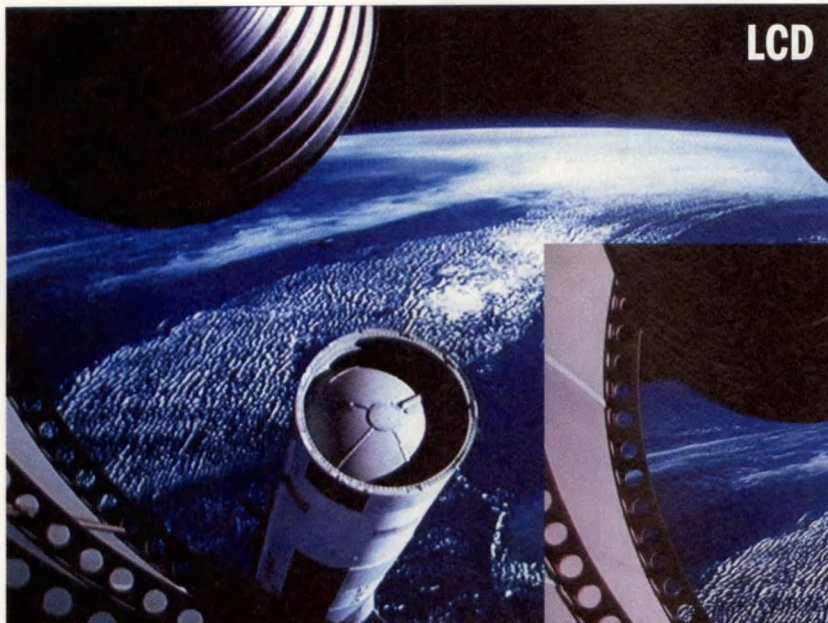
First true HD
1,280 x 720

Most Common mid-range
HD TV resolution
1,366 x 768

1,920 x 1,080 screen
1080i is interlaced,
1080p is progressive

HDTV — Myth 2

Plasma have darker blacks



In dark scenes in our test movie, detail that's in the shadows is more visible in the plasma. In the screenshots below and left, look down the side of the detaching rocket motor. You can see that detail resolves better on the Samsung plasma than on the Grundig LCD. This is typical of the technologies and was repeated on most of the plasmas and LCDs. Yet, turn up the lights, and the brighter whites of the Grundig give the LCD image more impact.



When we fired up both the LCD and plasma TVs, the difference in the ability of the two technologies to render blacks became apparent very quickly. The plasma HDTV's blacks are blacker and sharper, whereas the blacks and greys on the LCDs seem more washed out. That's because the blacks are generated by a fundamentally different process in each technology.

In simple terms, a plasma generates blacks simply by switching off the cells in the black part of the TV image. An LCD panel, instead, creates a black by turning the crystals off so they block the light. But some of the backlighting gets through — in fact, it's been shown that the most energy-

consuming colour in an LCD is a black. Since the LCD's blacks are lighter and the greys have less shades, contrast on plasmas is better and more detail is evident in darker scenes. When the astronauts in our test movie, *Apollo 13*, are travelling in the darkness of space, more spacecraft background detail, such as dial and buttons, is visible on the plasma TVs — even when compared to the best LCD TVs, such as the Sony 52in LCD 1080p panel.

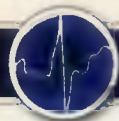
In the LCD panels, the blacks are not only slightly less black, but appear muddy instead of showing detail. This effect is most pronounced when the lights are off, when the backlighting of the LCD is particularly evident (as the entire

screen itself seems a lighter shade of black!).

However, things are not as simple as they seem. The disadvantages of LCD when it comes to rendering blacks are not pronounced in strong lighting. In fact, when we turned up the Labs lighting, the brighter (almost harsher) colours of the LCD panels work better, and it's the plasmas that start to get an overall muddier look. This proves one of the truisms of the plasma vs LCD debate: that plasmas are ideal for a home theatre, where you can turn the lights down and enjoy a more cinema-like picture. But in better-lit rooms (which can include living rooms with the lights on), plasma's advantage over LCD diminishes.

In fact, in well-lit rooms, LCD's sharper, brighter pictures can look superior. This is given as one reason why LCD panels are now outselling plasma TVs: in a brightly lit TV showroom, LCDs TVs will stand out more than plasmas.

So the myth is proven, but there are caveats: in our Labs, the plasmas did better blacks and contrasts every time when we turned the lights off. They were not as dominant the more we turned up the lights. The other thing to point out is that LCD TVs are also catching up through better processing of the images, and this was particularly evident in the new Toshiba Regza LCD panel, which was achieving contrasts not far off those of the plasmas.



HDTV — Myth 3

Plasmas are better at showing sport

We watched the Ten AFL HD broadcast on both the LCD and plasma TVs. The overall quality and feel of the game is a step up from standard definition, but we noticed that on the LCDs the picture becomes noticeably choppy in moments of sudden panning and intense action on the field. It's not something that happens with every play, but it is noticeable in moments of extreme action. While this kind of motion blurring is simply not an issue on CRT TVs, it takes some getting used to when you're watching sport on an LCD. The motion blurring is not just visible in sport. It also appears in fast pans across landscapes, or, in our test movie, when the camera was following the Saturn rocket as it left the gantry on its way to space. Plasma definitely wins out here because the response times of its phosphor-based cells are almost those of a CRT screen.

The myth is proven: but LCD

makers aren't standing still — they're throwing more processing power at the problem with each new generation of LCD panel. One popular solution now is to double the TV's frame or refresh rate. Standard PAL TV refreshes at 50Hz, or 50 times a second (25 interlaced frames of standard TV x2), but HDTV makers are introducing sets with 100Hz. The improvement this brings was starkly highlighted by the Toshiba Regza 32in HDTV in our Labs, which features a 100Hz refresh rate that doubles the normal standard picture refresh rate (adding an extra frame) that leads to extra smoothness.

A normal 50Hz HDTV picture consists of two frames, the A frame and B frame (or odd and even frame, or a frame pair). The frames are delivered so fast that the eye does not notice them, however, in LCD TVs running at 50Hz, each frame still has some hang time, held up while the screen waits for the next frame

to arrive. It's that waiting period that actually makes the motion blur visible. But with the refresh rate at 100Hz, the Toshiba engine is able to insert an extra frame between the A and B frames, generating an interpolated image that appears to smooth the transition. The end result that we could see was a significant lessening of motion blur. Philips takes the same

approach with its 'Digital Natural Motion' system, and it was evident with the Philips 32in TV we had in the Labs.

The myth is proven, since plasmas still do motion better, but the LCDs are using improved processing techniques to reduce the motion blur effects.

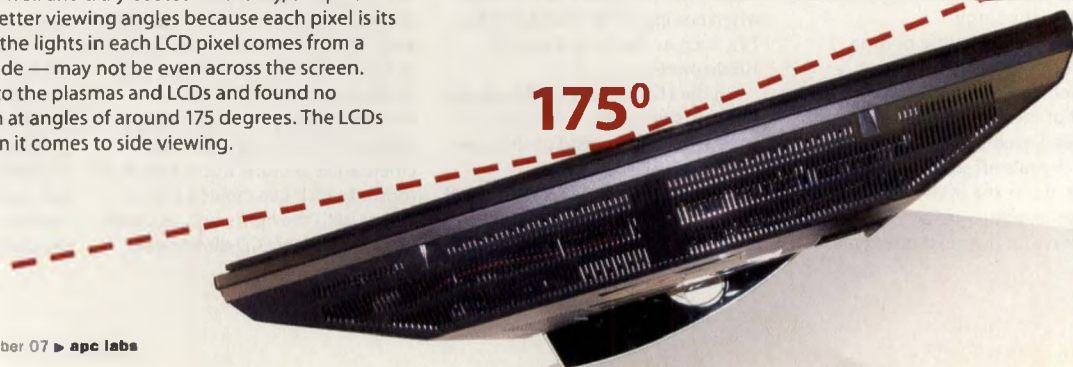


HDTV — Myth 4

Plasmas have better viewing angles

This is one myth that is well and truly busted. In theory, the plasma panels should have better viewing angles because each pixel is its own point of light, whereas the lights in each LCD pixel comes from a backlight that — from the side — may not be even across the screen. We stood at various angles to the plasmas and LCDs and found no meaningful difference, even at angles of around 175 degrees. The LCDs are as good as plasmas when it comes to side viewing.

175°



HDTV — Myth 5

Plasmas can suffer burn-in



Burn-in is fast becoming a thing of the past, but watch out for those dead pixels.

Burn-in happens when a fixed image remains on screen for too long and leaves a ghost of itself when removed. It's not an issue on LCDs, but it's a well-documented problem on earlier plasmas.

The ghost is actually a line of pixels that has burned bright for so long they have dimmed compared to surrounding pixels. Today's plasmas may be suffering by association from the sins of their forebears, however, as they are much better at preventing burn-in. We even left a fixed image on a Panasonic plasma for about eight hours (sorry Panasonic!) to see whether we could detect a faint burn or ghost, but no such bad luck. A Panasonic engineer who was not aware of our experiment then told us it would take about four days or more for a static image to burn its ghost onto a modern plasma screen. Improvements in the phosphor material used and 'pixel

orbiting' technology — which shifts pixels around if they don't move — has diminished the burn-in problem. It's highly unlikely that any plasma would be stuck on the same image four days in a row. The exceptions might be any plasmas permanently tuned in to video which displays an information strip, computer games with fixed screen dashboards, or 4:3 pictures that will put fixed black bars on either side of the screen.

But LCDs and Plasmas can also suffer from something else as insidious as burn-in — and that's dead pixels. These are more likely on LCD screens and are a known problem with LCDs in the computer industry. While makers will generally replace screens with dead pixels, it pays to check when you first fire up the HDTV. A thorough check of our LCD and plasma panels, however, didn't reveal any dead pixels.

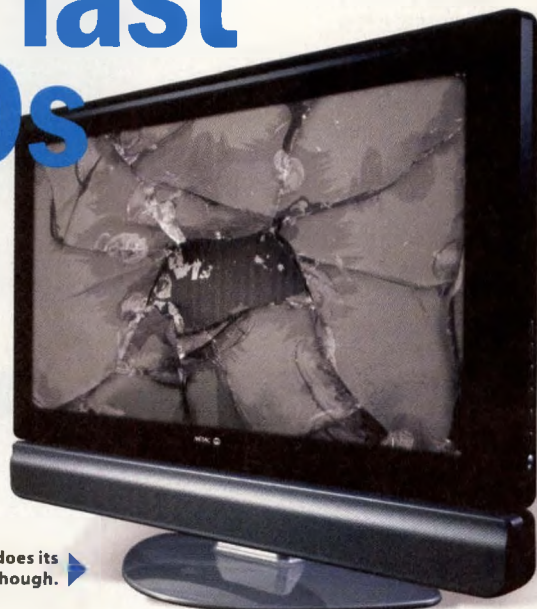
HDTV — Myth 6

Plasmas don't last as long as LCDs

This is slightly related to the burn-in issue, because it's all about how long plasma pixels retain their brightness. The lifespan of a HDTV set is the time it takes for its screen to dim to half its brightness. It's more of a concern in plasmas, because the gases — which are constantly turned into plasma inside the plasma cells — eventually lose their effectiveness and fade over time. It's well-documented that this happened to earlier plasma models at around 20,000 hours of use (which equates to about 10 years of watching

television five hours a day). Today's plasmas last between 30,000 and 40,000 hours, although manufacturers will claim up to 60,000 hours. So at the very least, a current-generation plasma will last around 15 to 20 years if you watch it five hours a day.

Myth is proven: but by the time the plasma has reached the end of its useful life, you'll probably have a new TV anyway. By contrast, LCD panels are rated at around 60,000 hours, so lifespan is not really an issue with them.



As plasma technology matures, so does its lifespan. LCDs will still outlast them though.



HDTV — Myth 7

Plasmas consume far more power than LCDs

Even without any testing, the plasma panels look like they'll use more power. They're generally heavier than the same-sized LCDs and even feel hotter from the back. The science says plasmas need to fire up the gas in each of the tiny plasma cells, so would need more voltage than the backlights that power LCDs. But to compare the power consumption of the TVs, we turned to the experts. Jaga Park-Ross, an Environmental Consultant with Neco Environmental Solutions (www.neco.com.au) used a Power-Mate meter to measure the wattage of all the TVs we tested. He took readings in standby mode, with a dark screen and with a bright screen. He also measured the energy consumption over a one-minute period using the same piece of *Apollo 13* footage being played from an HD DVD player connected via HDMI.

Environmental Consultant, Jaga Park-Ross, tested the power consumption of both the LCD and plasma TV's



According to Park-Ross, energy consumption hasn't always been a buying criterion for big-screen TV buyers, but with electricity costs forecast to rise 30% over the next few years due to the rising costs of carbon credits for power companies, it's definitely worth thinking about.

Standby power consumption of devices chews up about 10% of Australia's electricity usage annually, so it's well worth

looking for a TV with low consumption when it's off. The TVs we looked at were all good, ranging from 0.2 watts to 2.1 watts. According to Park-Ross, older appliances will sit there consuming 5 watts constantly, which can really add up over time.

The Toshiba TV is worth singling out, as it has a hard on-off switch that lets you turn the TV off completely for zero power consumption while you're away.

When it comes to the plasma vs LCD question, the plasmas tend to use more power — but the myth only just hangs on. It's not clear cut. You'd think the big Pioneer 50in PDP-5000EX plasma would be by far the highest consumer of power. But, its estimated hourly usage of 0.252 kilowatts is not as high as the Grundig 40cm LCD's 0.276 watts. The standout performer here was the Philips 32in set, which uses an astounding 0.078 kilowatts per hour.

So, how does a TV measure up to other household appliances? A flat-panel LCD or plasma uses about a kilowatt hour of electricity per day, assuming you have it switched on for four hours. That's about a quarter to half of your fridge's power consumption, depending on its size (they typically use 2-4 kilowatt hours per day).

TV POWER CONSUMPTION

Continuous wattage reading (not per hour)

	Idle	Dark screen	Bright screen	KW/h	Cost per KW/h	4 hrs usage	1yr usage
Philips 32 Inch LCD — 32PFL7532D/79	0.6	53	78	0.078	0.14	\$0.04	\$16
Toshiba Regza 32 Inch LCD — 32WL68A	0.9	80	151	0.174	0.14	\$0.10	\$36
LG 42 Inch plasma — 42PC1DG-AA	0.8	143	180	0.216	0.14	\$0.12	\$44
LG 42 Inch LCD — 42LC7D-AB	0.9	219	219	0.228	0.14	\$0.13	\$47
Samsung 40 Inch LCD — LA40M8	0.2	140	230	0.24	0.14	\$0.13	\$49
Grundig 40 Inch LCD — Cinema 40	2.1	230	230	0.276	0.14	\$0.15	\$56
Pioneer 50 Inch plasma — PDP-500EX	0.4	202	360	0.252	0.14	\$0.14	\$52

FOR COMPARISON

Continuous wattage reading (not per hour)

Comparison	Idle	Dark screen	Bright screen	KW/h	Cost per KW/h	4 hrs usage	1yr usage
HD-DVD player		42	42	0.042	0.14	\$0.02	\$9
Big old Sony CRT	1.3	160	160	0.16	0.14	\$0.09	\$33
BenQ 22in LCD		41	41	0.041	0.14	\$0.02	\$8

Does not include standby in calculation

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- Microsoft MCE2005 compatible and Vista certified
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- High quality MPEG-2/Transport Stream record/playback in digital TV
- Support SDTV, 1080i HDTV, Subtitle, Teletext, and Closed Caption



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DVB-T



COMP-E700

VideoMate E700

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- Dual DVB-T digital terrestrial TV reception to watch 2 main digital TV channels at the same time
- Power up scheduling recording & Remote control power on/off



Hybrid
A+D



COMP-U2700

VideoMate U2700

USB 2.0 DVB-T and Analogue TV Tuner Box with Remote

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- Enjoy HDTV-quality TV on your PC or notebook without the need to install the tuner inside your case



DUAL
A+D



COMP-T750

VideoMate T750

PCI DVB-T and Analogue TV/FM Dual Tuner Card

- Power Up Scheduled Recording
- Remote Controlled Power On/Off
- Supports MPEG-1/2/4 in analogue TV and video capture
- Watch DVB-T & Universal Analogue TV at the same time

COMP-V300

VideoMate V300

Standalone TV Box with 1680x1050 & 1080i Input

- OptiRatio aspect selection features for 4:3, 16:9, Panorama, Full Screen, and SmartZoom modes
- OptiMode scene selection features for TV, Cinema, and Game display modes
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- PIP feature to watch live TV in windows desktop
- Up to 1680 x 1050 & 1600 x 1200 resolution
- Standard 4:3/5:4 and 16:9/16:10 wide screen
- Component input (Y, Pb, Pr) support from 480i/480p to 1080i HDTV
- Special S-video, Composite video, Y/Cb/Cr Input base holder
- Support TV Stereo & SAP





HDTV — The issues

Viewing scenarios

The choice between plasma and LCD is best made by picking the technology that suits your viewing scenario.

I want the best home theatre experience



If wanting a 'home theatre' experience means you like to dim the lights and draw the curtains to create a little cinema in which to watch your movies, then plasma wins. In the dark, its higher contrasts, darker blacks and wider colour range reveal more fine detail in darker areas of the picture. We found that our test movies *Apollo 13* and *World Trade Center* looked more film-like on the plasmas, primarily because the colours seemed warmer and richer and reproduced skin tones better. That's partly because plasmas can produce billions of colours as opposed to the 16.7 million colours of an LCD. Some of the plasmas that give you the best cinematic experiences, such as the 50in Pioneer PDP-5000EX, don't come with sound or TV tuner, so you need to factor those into the equation if you want to do the cinema thing with TV movies. For a more realistic cinematic experience, content encoded at 1080p resolution is preferable, but you can only get this on a standalone Blu-ray or HD DVD player, or a Sony PS3 or Microsoft Xbox 360 equipped with a HD DVD external drive.

I want the best HDTV for the rugby world cup and the Olympics

A side effect of the fast-paced action in some sports is motion blur on LCD panels. These are improving as LCD makers find ways of reducing the blur, such as pushing refresh rates from 50Hz to 100Hz and above, and dropping their pixel response times. We found that the AFL was watchable on some of the good LCD screens, but there were moments of very fast action where the blur was unavoidable. If you're a purist, plasma is still the best technology for fast on-screen action.



I want to get something cheap as my first foray into HDTV

You can get a quality-brand 26in 1,366 x 768p LCD TV for around \$1,500-\$2,000. If you see a great price for an HDTV, make sure it's got an inbuilt HDTV tuner and speakers if you want a complete TV set. Small tuner-less HDTV panels can be as cheap as \$1,000. The cheapest entry-level HD plasmas with HD tuners will set you back around \$2,000-\$2,500, but it can be argued you get more TV for the price, given they'll be around 42in.



I want a general purpose TV that works in a well lit room

When we lit up the APC Labs, the plasma TVs lost some of their picture-quality advantages, as the brighter and crisper images of the LCD panels fought back against the stronger lighting. In reality, although a darkened room is the ideal environment for getting a more movie-like feel, most people view TV with the lights on or with light streaming through the windows — so in this kind of environment, the picture of the latest LCD televisions starts to have more cut-through and the subtleties of plasmas start to disappear. Plasma TVs also don't tend to drop below 42in in size, which is still the dimension of a big TV. If you want something a bit smaller but still large enough for it to be your main TV, then a 32in or 37in LCD will fit the bill nicely.



I want to play games

LCD screens produce a sharper, clearer and brighter picture, which suits video games and computer presentations. In fact, one trick that LCD retailers use is to have their LCD TVs play computer-animated movies such as *Shrek* or *Cars*, whose bright and limited colour range can look absolutely stunning on LCD screens — and negate some of the advantages of plasma TVs (although they look good on plasmas as well). Another advantage of LCD is that it's less likely to suffer burn-in from game dashboards or info panels.

I want a TV for the kitchen, bathroom or bedroom



A smaller second or third TV that can range in size from 20in to 32in can only be an LCD, as plasmas are not made that small. In addition, the kitchen or bathroom are likely to be very well lit, so LCD wins out here as well.

Hang the expense, I want the ultimate HDTV viewing experience

The solution here not as obvious as it may seem. We've said plasma TVs provide the better cinematic experience, and the Pioneer PDP-5000EX is still the best TV we've ever seen. However, ask the HDTV industry professionals about what they would consider the ultimate HD experience if money was no object, and they point to a combination of technologies: a HD projector for the big cinema experience and a smaller LCD TV for one's daily TV viewing. So we decided to check this one out. We loaded up *Apollo 13* in the Toshiba HD DVD drive and hooked the player up to a \$4,999 Epson EMP-TW1000 HD projector. The full HD 1080p projector generated an image about 2.5 metres wide on our photographic studio wall — it was quite simply astonishing, recreating the cinema experience like no plasma or LCD HDTV could. We then understood why those in the know were partial to HD projectors. If you want a home theatre that's a replica of the big screen cinema experience, a HD projector is the way to go. But HD projectors are not just great for movies. Connect a HD tuner to a top-of-the-line HDTV projector and you can watch big-screen sport without enduring any of the motion artefacts that bedevil the HDTVs, particularly the LCDs. Having said that, you need a very dark room in which to get the best image, and not everyone will come home, turn the TV room pitch black and start the projector to watch the evening news. So, if we'd paid \$4,999 for the Epson EMP-TW1000, we'd then throw in an additional small 32in or 37in LCD TV for the news and everything else you watch with the lights on.



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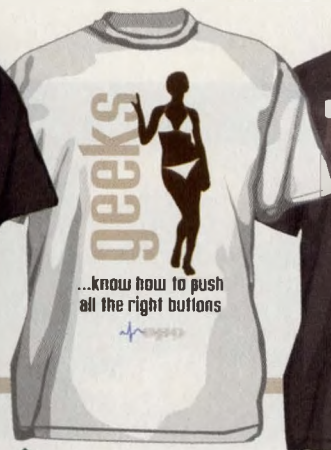
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Light up your laptop so you're not flying blind in darkened places. Suitable for: bedrooms if your partner is sleeping; road trips if you're stuck in the back with the suitcases; or movie theatres if you've been dragged to a chick flick.



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LCD vs Plasma

The Conclusion

Comparing LCD and plasma TVs was unlike any other tests we've done. A PC's performance can be easily tested against established benchmarks, and the results are generally objective. But the numbers behind HDTV sets simply don't tell the full story. What theoretically makes sense on paper doesn't when you view it on screen. At times our testers had trouble discerning the difference in resolution between a 1,366 x 768p 40in Plasma and a 1080p 50in LCD set. Or explaining why the contrasts on one 32in LCD panel were nearly as good as the blacks on the plasmas, when LCD and its backlighting technology are known to have physics against them in their attempts to do lighter blacks. When you add the fact that HD resolution is really a combination of the set's native resolution and the resolution



Our friends at Wheels magazine gave us their impressions. Read their full comments at apcmag.com/hdtv

of the content it's playing, it's virtually impossible to say on paper that one TV is going to be better than another. So, assessing a TV is still, primarily, a subjective experience that you need to undergo before picking the right set. It all depends on where you watch the TV and what it's playing.

But, to sum up our comparison of plasmas and LCDs, plasmas offer a higher-quality picture when the lights are turned off. They are the technology for those who want a more cinema-like experience, or purists who want to watch sport without any motion blur. LCD TVs come in more shapes and sizes and

are suitable for more rooms in the home (and work better in well-lit environments). They also use less power, though again, our tests showed we can't generalise there either. Manufacturers are also applying more processing power to the LCD images and, over time, the gap to the plasma blacks and motion handling will keep closing.

If APC was a household with more than one TV, we'd stick a 42in or 50in plasma in the room designated as the home theatre, and LCDs in other parts of the house that have more ambient light, so we'd get the best of both worlds. If we had infinite amounts of money, we'd choose a HD 1080p projector for the home theatre, and LCD panels for the day-to-day TV viewing.

For more detail on the testing and individual TV sets, go to www.apcmag.com/hdtv. 



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Next GTM

the new wireless in town

There's been a lot of hype about the Next GTM network, Telstra's next-generation wireless network that provides faster speeds in more places. So what's the real deal, and what can the Next GTM network do for you to enhance your personal or business mobile broadband experience?

Back in November 2005, APC Magazine featured a Labs Challenge on wireless routers to help you "untangle your home network's cabling nightmares." At the same time, Telstra, thinking along similar lines, announced that it was investing \$1 billion to build Australia's first national 3G mobile network, the Next GTM network, which, it was said, would reach 98 per cent of the Australian population. Less than a year later, the Next GTM network was launched, and now covers 98.8 per cent of our population and providing Australian users with the cutting edge of mobile communication: the ability to make and receive video calls, watch FOXTEL by Mobile, access sports, news and entertainment, use email, and download and play music - all while on the move and just about anywhere in Australia (plus, you could make voice calls and send text messages, just in case you were wondering). The result was the world's fastest national mobile network and Australia's largest mobile network. Here are the facts on this Aussie innovation.

A world-class network
The first national rollout of its kind globally, the Next GTM network offers peak network speeds that are up to four times faster than what was available previously (downlinks up to 14.4Mbps and uplinks of 1.5Mbps). Put another way, this is more than 250 times faster than a standard dialup internet connection. Average user download speeds are 550kbps to 1.5Mbps depending on the device, user location and other factors. For Next GTM network users with compatible mobiles, PDAs

or laptops, this means faster data delivery and higher data rates than what is available with any competing 3G networks in Australia - faster response on video calls and faster net, FOXTEL by Mobile and email. Plus, downloading a four-minute MP3 can take just seconds. And things aren't slowing down either: the Next GTM network is providing the foundation for Super 3G and 4G networks, with plans on track to reach a peak network downlink speeds of 40Mbps in 2009.

Business class

It's not only home users that are benefiting from the Next GTM network - business and government are seeing productivity improvements with their workers using the new national high-speed network. Information once stored in the office is now accessible on the road, at the client's offices, or in the back of a taxi heading to the airport. Plus, the Next GTM network offers specialised business applications, business-focused news, services and content, corporate email solutions and video conferencing.



Speed machines

Faster devices are on the rise: manufacturers are working with Telstra to build and test higher-speed data cards and devices. Soon you'll see peak downlink speeds of 7.2Mbps (and enhanced uplink speeds of around 1.5Mbps). Aside from raw speed, Next G™ customers can utilise broadband speeds during ever-busier periods, due to the network's tripled capacity (owing to extended range software upgrades)



Undercover

Providing the largest blanket coverage (breadth and depth) of any 3G mobile provider in Australia, the Next G™ network extends to over 1.9 million square kilometres. The Next G™ network also offers better in-building coverage, due to the use of the 850MHz spectrum and the installation of 3G850 technology in all 2GSM and CDMA base stations (and the ongoing deployment of new sites). The Next G™ network is the first and only national high-speed mobile broadband network in Australia - and the world's first national mobile network to offer up to 200km cell range. The network provides mobile broadband access to 98.8 per cent of Australians, which makes it 100 times bigger than any other Australian 3GSM network. To extend the range even further into remote areas, Telstra is using Ericsson's extended range software to extend maximum base station coverage, and additional deployment into many remote areas Australia-wide is ongoing.

Australian-made industry-leading technology

The advent of the Next G™ network has not gone unnoticed elsewhere - the world is watching and, according to Telstra's wireless executive director Mike Wright, inquiries are now coming in from across the globe. There is an especially high level of interest in the types of devices, services and applications that

are available on the Next G™ network (particularly FOXTEL by Mobile). The simplicity of Next G™ services is a major drawcard. Says Ross Fielding (of Telstra Product Management): "Telstra's one-click, one touch strategy shows that if the applications and content are easy to use and access, people will pick them up." Further, the Next G™ network's success now sees handset providers and application suppliers test their handsets and applications on the Telstra network prior to international rollout - US carrier Cingular Wireless (54 million subscribers) is also utilising the 3G 850MHz spectrum, and Rogers Wireless, Canada's largest voice and data operator, is deploying a coast-to-coast 3G 850 network. Of special note is Ericsson and Telstra's world-first feat in February 2007: establishing a 200km cell range in a nationwide network (and with downlink speed of up to 14.4Mbps and average user speeds from 550Kbps to 1.5Mbps). This solution provides a major leap from the 50km range typically supported today, and is particularly important for remote users who want to take advantage of the high-speed network - even extending to off-shore users on ships and oil rigs.

An enhanced experience

So what does this mean for you? Essentially, in addition to standard text and voice functionality, the Next G™ network provides users with a wider

range of services than other providers: keep in touch with friends and family around the world via video calling, enjoy FOXTEL by Mobile, and access the net, online photo albums, blogs, email and music downloads. Plus, because Telstra has combed the reach of its existing networks and extended coverage on highways, there's basically greater third generation mobile coverage than what you'll find anywhere else in Australia. Mobile broadband doesn't just keep you closer to friends - it'll help you wirelessly stay in touch with your work or corporate network, and with global roaming, users can benefit from access to voice and SMS mobile services in more than 140 countries overseas.



"While we are out harvesting, we can access the storage handling and marketing sites using the Next G™ network to check screenings of protein for immediate feedback on the paddocks we are harvesting."

DEBBIE THIELE
GRAIN FARMER

"My Next G™ phone is really helping to improve the service I offer. It's one of my best tools."

HENRY PAUL
DEER FARMER AND RESCUE OPERATOR
WIVENHOE DEER FARM

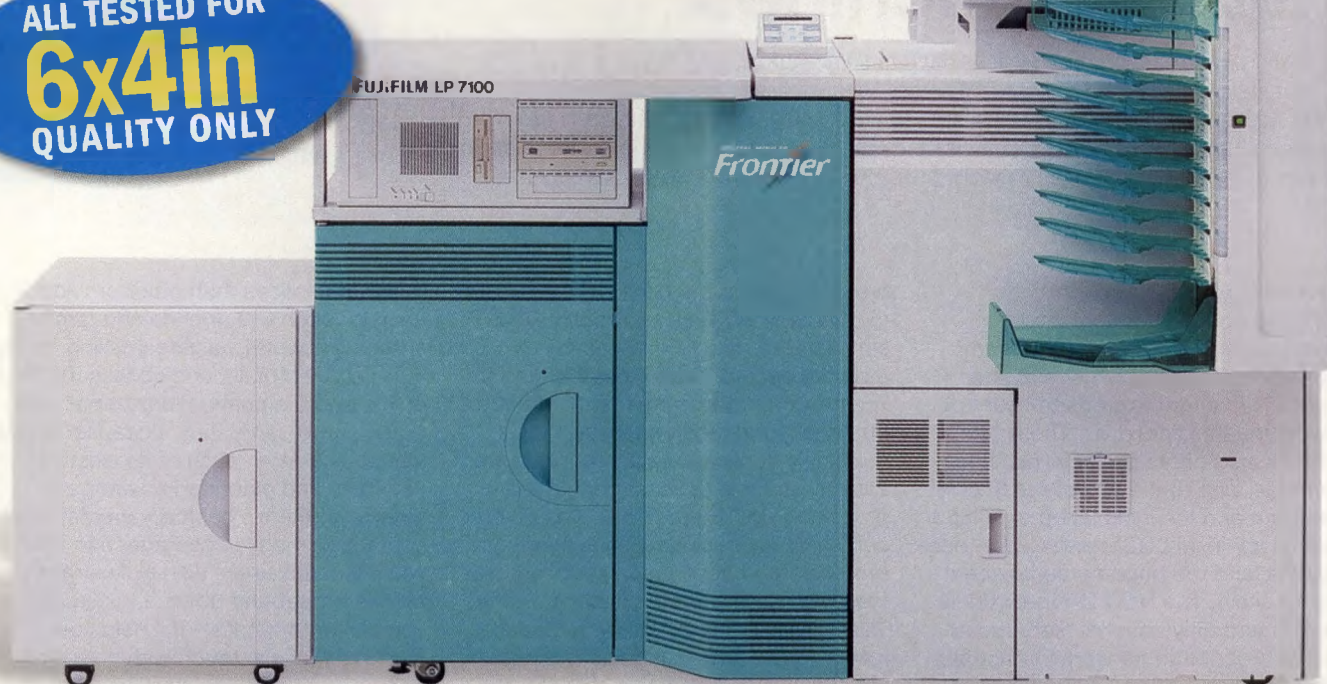
Coverage tips

In order to get the best coverage, especially if you're in a remote area, Telstra recommends Next G™ devices that are compatible with an external antenna. These can plug directly into Next G™ handsets or devices. Plus, there's fitted car kits which include directly connected external aerials - these are available only for selected handsets, so you'd best call Telstra directly for advice before you buy. The best bet is to look out for the Next G handsets with a dark blue tick which show they are best suited for rural handheld use.





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6x4in
QUALITY ONLY



Printing digital photos

Stephen Withers checks out four printers and compares them to professional lab printing services to find which gives you the best and most cost-effective results.

There are any number of printers on the market that claim to deliver photo quality, but are they really comparable with the results you'll get from photo processing services available at your local shopping centre?

APC lined up a selection of printers from four of the leading manufacturers and put them to the test. We used four test images. The close-up of the baby's face should reveal smooth gradations in the skin tones, plus good contrast in the eyes. The lollipop shot involves bright colours, white clothing and skin tones. The boardwalk photo features a blue sky with natural greens and browns, plus white clothing to show any overall colour cast. Finally, the composite image throws the kitchen sink at the

printers, including whites, greys, reflective surfaces and a variety of skin tones.

While speed is generally less important than quality, we did measure the click-to-drop time to print the baby photo from Windows XP. Please note that the ratings below are based only on the 6 x 4in prints we made, and do not take into consideration general printing or photo printing at larger sizes.

CANON PIXMA iP6700D

At 43cm wide, you wouldn't call the iP6700D a compact A4 printer, but the industrial design gives it a relatively low-bulk appearance. It's approximately 18cm high, excluding the paper feed tray and flip-up screen. The overall footprint is 55cm deep.

The 9cm LCD makes for clear front panel instructions and menus, and gives a decent-sized preview when printing photos directly from media. Supported card types are Compact Flash (including MicroDrive), Memory Stick (including Pro), Secure Digital, MultiMediaCard and SmartMedia cards. PictBridge-compliant cameras (but not USB storage devices, which is a shame) can be connected to the USB port, which is also used for the optional Bluetooth module (our D-Link Bluetooth dongle wasn't recognised). There's also an IrDA port for printing from devices such as mobile phones that support infra-red.

Printable CDs and DVDs are accommodated with a compact adaptor tray.

The software consists of a driver for the printer and another for the memory card reader, Easy Photo Print, CD-LabelPrint, and a utility to simplify printing web pages from Internet Explorer. On our Mac OS X system, the installer deleted existing Canon printer setups, which was an unnecessary annoyance. On the other hand, it produced borderless prints from images stored in iPhoto with no problems.

The iP6700D uses a six-ink system: cyan, pale cyan, magenta, pale magenta, yellow and black — each in its own cartridge. In addition to the on-screen (PC and LCD) low ink warnings, flashing lights on the ink carrier identify which cartridge needs replacing when you open the cover, so there's little risk of removing the wrong one. The



iP6700D completed our speed test in one minute, 21 seconds.

The adult hand in the baby photo didn't have the slightly dirty look visible in several other prints, and the eyes had good contrast. The lollipop shot had decent saturation without too much red, and, while the sky above the boardwalk wasn't too dark at the top-left corner, some detail was missing along the horizon. The composite image had good sharpness, though the white areas near the top had a noticeably brown cast.

EPSON STYLUS PHOTO R800

The R800 is a straightforward printer — it doesn't take memory cards or support PictBridge cameras, but it does print on A4 paper. As an alternative to individual sheets,

it also takes rolls of paper, which could be useful when printing photos in bulk. The R800 does double-duty as a CD/DVD printer, which is useful when archiving all those digital photos.

It is on the bulky side at around 49cm wide, 19cm high and 30cm deep (excluding paper-handling devices — the overall footprint is around 60cm deep).

USB and (unusually) FireWire/1394 interfaces are provided, with drivers for Windows (including x64 versions) and Mac OS, plus a software bundle that includes PIF Designer (picture frames), Print CD, Easy Photo Print, Darkroom Print (adjust images before printing), RAW Print and Creativity Suite (not as exciting as it sounds, this last item is mainly about managing images,

1 LEXMARK P350

• CONTACT Lexmark
• ONLINE www.lexmark.com.au
• MARKET Everyone
• PRICE \$179

✓ Portability.

• VERDICT ★★★★★

✗ Uneven, low-gloss finish.

2 CANON PIXMA IP6700D

• CONTACT Canon
• ONLINE www.canon.com.au
• MARKET Everyone
• PRICE \$349

✓ Large LCD.

• VERDICT ★★★★★

✗ No support for USB storage devices.

3 EPSON STYLUS PHOTO R800

• CONTACT Epson
• ONLINE www.epson.com.au
• MARKET Everyone
• PRICE \$599

✓ Takes paper rolls, FireWire and USB.

• VERDICT ★★★★★

✗ Too much red in skin tones.

4 HP PHOTOSMART D7 160

• CONTACT HP
• ONLINE www.hp.com.au
• MARKET Everyone
• PRICE \$199

✓ Dedicated photo paper tray; speedy.

• VERDICT ★★★★★

✗ Some lack of sharpness.

**TEST 1: COLOUR BALANCE**

- 1 Lexmark P350
- 2 Canon Pixma IP6700D
- 3 Epson Stylus photo R800
- 4 HP Photosmart D7 160
- 5 Fuji Labs processed
- 6 Kodak labs processed
- 7 Chemist labs processed (sent to Kodak)
- 8 Supermarket labs processed (sent to Kodak)

BEST= #5**WORST= #1**

printing them, attaching them to emails and so on).

We timed the R800 at one minute, 57 seconds. There was virtually no difference in print times via FireWire and USB 2.0, but we were unable to find a setting for borderless printing via USB in the Mac software. Furthermore, the Mac version of Easy Photo Print seemed very sluggish in operation.

Prints made on Epson Premium Glossy paper had an even gloss that matched our commercial prints, though slightly more of the image was cropped than it was by the other printers and services. There was also a redness that was immediately noticeable in the skin

tones in the lollipop picture and in the baby's lips. On the other hand, the gradation of the baby's forehead seemed smoother, presumably due to the seven-ink system using separate cartridges (cyan, yellow, magenta, black, photo black, red and blue, plus a gloss enhancer).

We also thought the colours in the compound test image were more vivid in a way that people might prefer for a happy snap — reminiscent of the results from the old Kodak colour film and processing aimed at the consumer market in the 1980s.

HP PHOTOSMART D7160

The gloss white and matte grey

finish of the D7160 might sound like a compromise between the Mac and PC camps, but it works quite well. The unit measures 46cm wide, 50cm deep with paper catcher extended, and 17cm high (excluding the LCD).

The overall impression is sleek and wide, but the external power supply has HP's usual very short mains lead, and there is a relatively noisy 'preparation' phase when the unit first switched on.

Paper is loaded from and delivered to the front of the printer. Separate A4 and photo (10 x 10cm) trays mean you can keep both types of media loaded, which is an advantage over printers with a single feed. Furthermore, the printer

automatically detects paper types such as HP Advanced Photo Paper, so there's less fiddling with settings.

The D7160 can be used as a standalone printer. Memory card slots beneath a clear flap (presumably to keep the dust out, but with a reduced risk of leaving a card behind) accept xD, Compact Flash, Memory Stick, Secure Digital and MultiMemoryCard. PictBridge cameras and USB storage devices can also be connected. The front USB port accepts a Bluetooth dongle and worked properly with our D-Link DBT-122.

A wizard guides the user through standalone printing — choose paper size and layout (eg. single

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prints, index sheets or two 5 x 7s on an A4 page), view and select, crop and rotate, then preview and print.

Software consists of the printer and memory card drivers, along with Photosmart Premier (view, edit and print photos, create album pages and other projects, back up etc.) and various minor supporting utilities such as a software updater. The Mac software largely duplicates iPhoto, but adds some useful or interesting options.

The D7160 recorded a speedy 38-second click-to-drop time. HP claims subsequent pages can be produced in as little as 12 seconds, depending on the image, but we clocked it at 21 seconds.



COLOURS IN THE COMPOUND TEST IMAGE WERE MORE VIVID IN A WAY THAT PEOPLE MIGHT PREFER FOR A HAPPY SNAP

The prints themselves seemed slightly red, especially on skin tones. The detail in the baby's eyes is clear, while the sky isn't too dark at the top left of the boardwalk photo and there's good cloud detail. Some of the fine detail in the composite image (eg. the mesh on the hat at the top) could have been sharper.

LEXMARK P350

The P350 is well-featured despite its small size (23.5 x 14.5 x 12.5cm,

excluding paper hopper and catcher). The reason it's small is that it is limited to paper sizes around 6 x 4in for standard prints. If that's all you need, a printer like this could be a great adjunct to a laser, or a larger but non-photo quality inkjet.

It features a carrying handle, but there's no provision for the external power adaptor or internal paper storage, so it is 'transportable' rather than 'portable'. The single ink cartridge is convenient, but

inevitably means throwing some ink away when any one colour runs out.

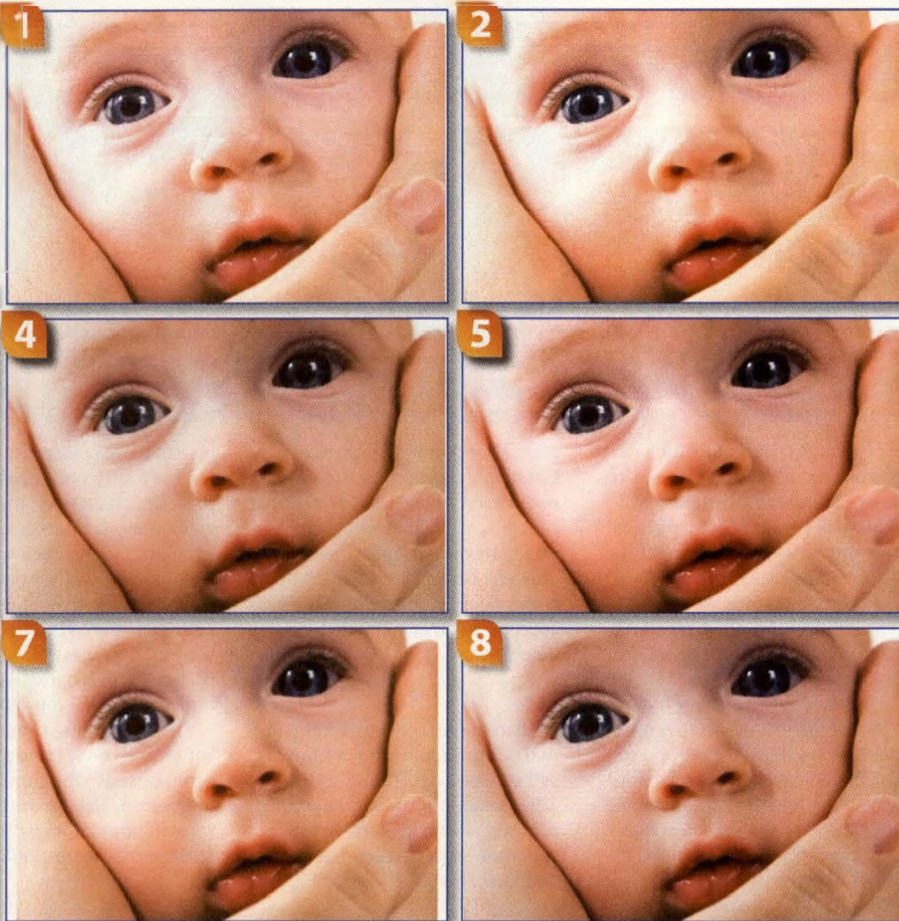
If you don't want to use the P350 with a computer, you can plug xD, Memory Stick, Secure Digital, MultiMediaCard and Compact Flash cards into the front panel slots for direct printing. USB storage devices and PictBridge cameras can be connected to the front USB port. Bluetooth is supported but not built in; we successfully used a D-Link DBT-122 dongle.

TEST 2: SKIN TONES

- 1 Lexmark P350
- 2 Canon Pixma IP6700D
- 3 Epson Stylus photo R800
- 4 HP Photosmart D7 160
- 5 Fuji Labs processed
- 6 Kodak labs processed
- 7 Chemist labs processed (sent to Kodak)
- 8 Supermarket labs processed (sent to Kodak)

BEST= #4

WORST= #6



EPSON
EXCEED YOUR VISION

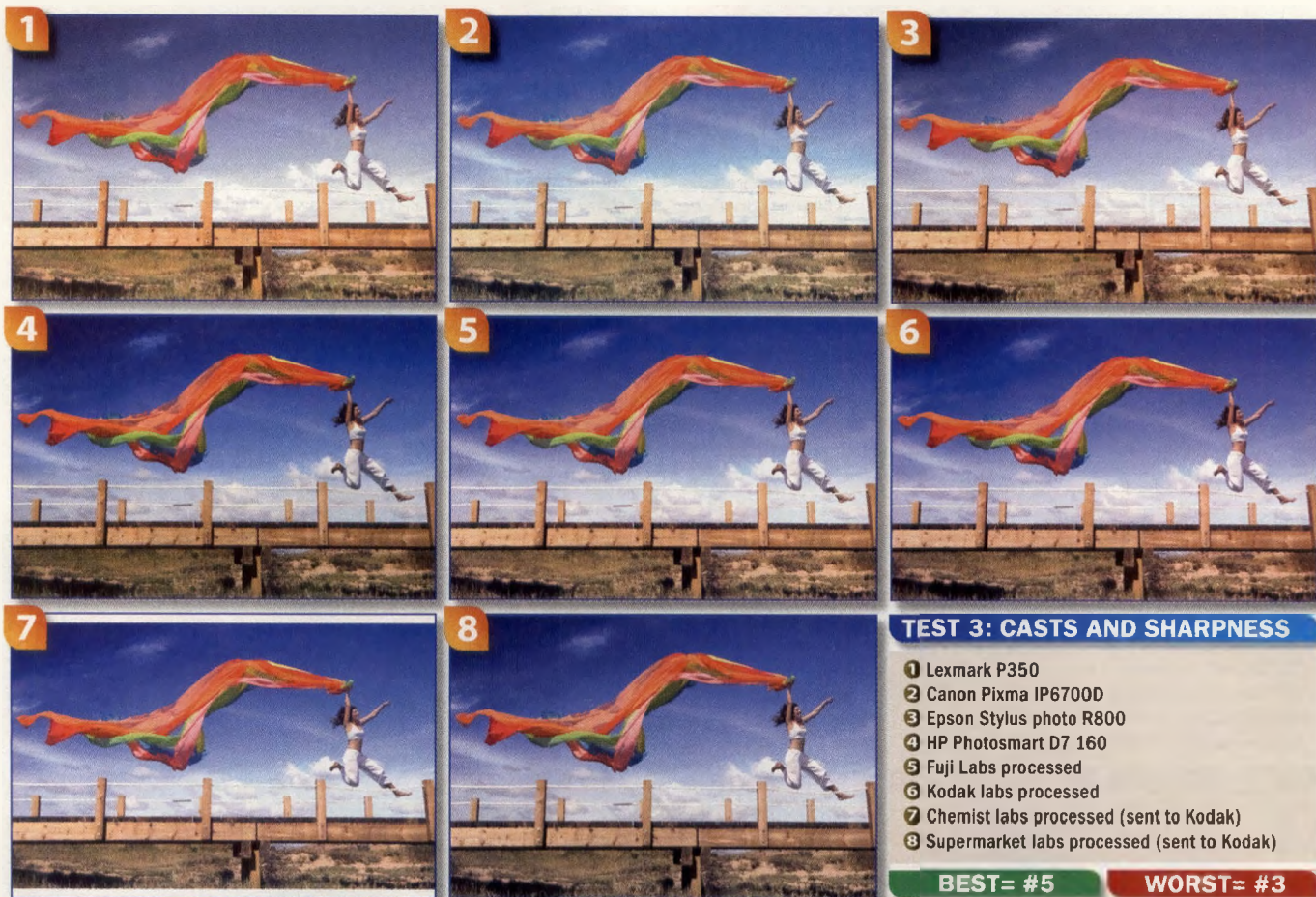


ONLY REPLACE THE
COLOUR YOU USE.



FROM **\$8.99**
PER CARTRIDGE





TEST 3: CASTS AND SHARPNESS

- 1 Lexmark P350
- 2 Canon Pixma IP6700D
- 3 Epson Stylus photo R800
- 4 HP Photosmart D7 160
- 5 Fuji Labs processed
- 6 Kodak labs processed
- 7 Chemist labs processed (sent to Kodak)
- 8 Supermarket labs processed (sent to Kodak)

BEST= #5

WORST= #3

A 6cm LCD panel and nine buttons provide the user interface, so you can select the photos you want to print and how they are to be printed.

The downside with direct printing was that we always got a thin white border down one long edge of the prints, but this did not occur when printing from a PC.

The Windows software includes a printer driver (with annoying audio alerts — 'printing started' and so on), drivers to make the card slots accessible from the computer, and a utility to allow the selection and printing of photos from the PC rather than the printer's front panel. Printing from the computer took one minute, 53 seconds. Mac printer drivers are included, but would not work on our system, and an online request for tech support wasn't answered before we finished testing. Two days later, the response was: "Please call our technical support centre". Next time, we'll go straight to the phone.

Lexmark's PerfectFinish photo paper starts glossy but turns semi-

gloss after printing. If you like traditional gloss prints, this might not be to your taste. It is a particular problem with white areas, which retain the original gloss, giving an uneven result that's reminiscent of colour laser printing where the area covered by toner is shinier than the bare paper.

LABS

We had our test photos printed at two photo shops using in-house self-service kiosks (one Fuji, the other Kodak), and also by two outsourced services offered at suburban stores (a pharmacy and a supermarket).

KIOSKS

The results from the two kiosks were very similar. The prints made by the Kodak equipment were slightly darker than their Fuji counterparts, though in three out of four cases this wasn't apparent unless you compared them side by side. The difference was more in terms of an overall brownness rather than the way we normally think of brightness

on a black-to-white continuum.

The fourth photo was the one of the baby's face. Here, the difference was apparent when the photos were examined sequentially rather than simultaneously. The colour of the Fuji print looked more natural, but at the same time there seemed to be too much contrast leading to a loss of detail. This is particularly noticeable in the top-left corner.

The Fuji prints seemed slightly softer, and this was most pronounced in the compound image, especially in the hat at the top-left, the sunflower (middle-left) and the chain (top-right).

STORES

Both sets of store prints came back on Kodak paper, and were presumably produced on Kodak equipment.

The chemist gave the option of 'full image' prints — but a significant amount of cropping occurred at the short ends, with white borders along the long edges. Even though we ordered full image prints from the supermarket, standard prints were

delivered. In other circumstances we would have asked for the job to be reprinted.

Despite those issues, we preferred both of these sets to the kiosk prints. The detail in the baby's eyes was clearer and the skintones looked more natural. The transition from the deep blue sky to the white clouds looked smoother in the boardwalk shot, and the compound image seemed generally sharper than the Fuji print.

A consideration with the 'send away' processors is that they will print every image on the medium you provide, with the same number of prints for each. So on one order you can't get one set of prints except for numbers 18 and 44, plus an extra two copies of numbers 12, 15 and 17 for the grandparents.

Furthermore, do you trust them with a memory card or USB stick containing your photos? Even if you do (and admittedly, memory cards are a fraction of the price they used to be), you probably won't want to be without it for a few days, so you'll need to burn a CD — more time,

more trouble, and a little more expense. Never part with the only digital copies of your photos!

COST

Trying to determine the running costs of printers is fraught with difficulty. Whatever methodology we might adopt, one or another manufacturer is almost certain to protest that it didn't accurately reflect the characteristics of their product.

With photo printing, it's a little bit easier thanks to the tendency to offer packs containing a set of ink cartridges and a corresponding amount of photo paper.

For example, the kit containing a cartridge and 100 sheets of paper for the Lexmark P350 costs just under \$40, or 40 cents per print.

While a business might amortise the initial cost of a printer over the number of prints expected over its lifetime, we suspect individuals and especially families are likely to regard that as a sunk cost — the admission fee for on-demand photo printing.



THE DIFFERENCE WAS MORE IN TERMS OF AN OVERALL BROWNNESS RATHER THAN THE WAY WE NORMALLY THINK OF BRIGHTNESS

Printing prices vary at the shopping centre too. With only four images, we paid the top rate at the kiosks: 50 cents for Fuji, 75 cents for Kodak.

The price at the chemist was 35 cents, while the supermarket's rate was a remarkably low (for such a small quantity) 25 cents.

As a rule, the bigger the quantity, the lower the price per print, and if you're having hundreds of prints made, it isn't hard to find prices as low as 15 cents.

Remember that the kiosks provide almost immediate service (those we tried took 10-45 minutes depending on how busy they were at the time) compared with the three-day turnaround from the 'send away' processors.

If you're churning out 6 x 4s, home printing doesn't make a lot of sense from a cost perspective,

but if you're being selective it is comparable with using a self-service kiosk.

CONCLUSION

The short answer to the question posed in the introduction is yes — these generally affordable printers do deliver similar quality to commercial photo printing. Our brief wasn't to compare the different printers with each other (apart from anything else, their prices cover too wide a range), but when we lined their output up against the commercial prints, there wasn't a lot between the two groups. For example, the least-liked baby photo was printed commercially, while the least-liked lollipop photo was produced on an inkjet. Apart from those two, we think most people would be satisfied with most of the prints, even though you can see

differences between them in a side-by-side comparison.

Home printing is really a convenience thing, coupled with the ability to tweak prints to get exactly the result you were after — even if that means wasting some ink and paper in the process.

If you took the photos at a family event, such as a wedding anniversary, and you need to produce sets of prints for various relatives, an off-site commercial service will save time and money. That said, a unit such as the Lexmark P350 would allow on-the-spot printing of guests' favourite shots.

When it comes to making that special enlargement to be framed and hung in the lounge room, there's a lot to be said for doing the preparatory work on your computer and making the final print in-house, so you get what you expect. [APC](#)

TEST 4: OVERALL QUALITY

- 1 Lexmark P350
- 2 Canon Pixma IP6700D
- 3 Epson Stylus photo R800
- 4 HP Photosmart D7 160
- 5 Fuji Labs processed
- 6 Kodak labs processed
- 7 Chemist labs processed (sent to Kodak)
- 8 Supermarket labs processed (sent to Kodak)

BEST= #2

WORST= #5





BEST TECH

APC's independent reviewers point to the best technologies in the top-selling product categories each month. We only change products when a better one comes along. What you see here is the best technology available on the market.



The **Best Value** award is for products which offer a good combination of features for a reasonable price.



The **Best Overall** award is for products we believe are the best, regardless of price.

Best Tech is edited by William Maher. Contributors to the APC Best Tech guide: Ashton Mills, Nick Race, Tony Sarno, Dan Warne, Chris Zammit and Stephen Withers.



DESKTOP PCS – GENERAL USE

Enspire Vitesse XP2

CONTACT Enspire Digital
ONLINE www.enspiredigital.com.au
PRICE \$2,899



This is an excellent do-everything PC with Intel's new P35 chipset, Core 2 Duo E6700, 2GB of high performance DDR2-800 memory and Nvidia GeForce 8800 GTS graphics. You get a 500GB SATA II drive and a big Samsung 205BW 20in widescreen LCD with a TV tuner. A good mix of CPU grunt, graphics and storage.



DESKTOP PCS – BUSINESS

Dell OptiPlex 745 mini tower

CONTACT Dell
ONLINE www.dell.com.au
PRICE \$1,635.70 (our spec)



With Intel's new Core 2 Duo onboard, this represents the top of the line in a business computing platform. Key features include a Core 2 Duo E6300 (1.8GHz) chip, 1GB DDR2 RAM, a 160GB Serial ATA hard drive, and 3-year next-business-day on-site warranty. Price includes 17in LCD monitor.



MOTHERBOARDS

ASUS P5N32-E SLI motherboard

CONTACT ASUS
ONLINE www.asus.com.au
PRICE \$379 (P5N32-E SLI); \$349 (SLI)



Motherboards based on Nvidia's 680i chipset are the bees knees for enthusiasts. The P5N32-E SLI includes two 16x PCI Express lanes for Nvidia cards in SLI configuration, support for Core 2 Extreme, Core 2 Duo and Socket 775 processors, automatic overclocking of RAM, and 1,333MHz FSB future processors from Intel.



Altech Sputnik

CONTACT Altech Computers
ONLINE www.altech.com.au
PRICE \$1,499



The Sputnik has great potential for upgrades; using the P35 chipset, the sky's the limit as far as CPU upgrades go. The CPU is an Intel Core 2 Duo E6600, fitted with 1GB Corsair Value Select DDR2-667 RAM. It cuts it a little fine for Vista, but it has Windows XP Pro SP2. You also get an Nvidia GeForce 8500GT.



Dell Dimension C521

CONTACT Dell
ONLINE www.dell.com.au
PRICE \$1,155 (our spec)



As cheap as anything you'll find with dual-core (though you'll get cheaper with P4), we managed to spec the C521 with an Athlon 64 X2 3800+, 1GB RAM, a 19in LCD and 80GB HDD. The weak point is the integrated graphics: Vista-compliant, but you'll need to turn off the eye candy.

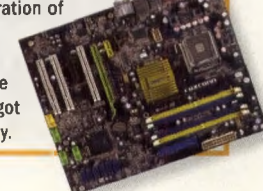


Foxconn P9657AA-8KS2H

CONTACT Foxconn
ONLINE www.foxconnchannel.com
PRICE \$165



This board only has a single x16 PCI Express slot, so it can't be used for CrossFire or SLI. However, it also has one x1 and one x4 PCI slot ready for the next-generation of PCI-E expansion cards. Combine this with HD audio, five SATA and one eSATA port and you've got top value for your money.



VIDEO CARDS

MSI GeForce 8800 GTS 320MB

CONTACT MSI
ONLINE www.msicomputer.com.au
PRICE \$479



There is a pretty big difference between the GTX and the GTS models on paper, but the performance of the much cheaper GTS is still rock-solid. Testing in F.E.A.R. and Quake 4 had the card singing — the GTS 320MB version never slowed or shuddered, even with the system-killing 16xAA turned on.



Nvidia GeForce 7600 GT

CONTACT Nvidia
ONLINE www.nvidia.com
PRICE Approx. \$210



Nvidia's mainstream card, the GeForce 7600 GT raises the bar for price compared to performance. With significant performance boosts over the last-generation 6600 GT card, the 7600 GT also comes with support for SLI, allowing performance to spiral even higher.



LCD MONITORS

HP w1907

CONTACT HP
ONLINE www.hp.com.au
PRICE \$549



It's not the 24in Dell behemoth we featured in April's issue, but for most people, this 19in model is probably a better fit. It was our pick of the glossy screens in May's LCD monitor roundup (see page 52), with a bright, crystal-clear screen and less of the darkened corners seen in some rivals.



Chimei CMV946D

CONTACT Protac
ONLINE www.protac.com.au
PRICE \$299



This is about as cheap as you can get for a 19in wide-screen LCD. Resolution is 1,440 x 900 and image quality is crisp and colours excellent. We found some noise present, but otherwise we didn't find any significant problems. You get D-Sub/DVI-D inputs and a 2ms response time.



OPTICAL DRIVES — DVD

ASUS DRW-1814BLT DVD writer

CONTACT ASUS
ONLINE www.asus.com.au
PRICE \$79



Finally, a retail SATA optical drive! This is a premium drive, running at 18x DVD±RW writing, 8x DVD±R Double Layer and 48x CD writing. Interestingly, it's only rated to read DVDs at 16x (slower than it can write to them). In the box, you get a couple of blank LightScribe-compatible discs, and Nero 6 OEM.



Pioneer DVR-212D

CONTACT Pioneer
ONLINE www.pioneer.com.au
PRICE \$89



Despite the name, the DVR-212D appears to be identical to the DVR-A12XL in terms of specs and features, including firmware upgradeability — only it's a SATA variant instead of IDE as with the DVR-A12XL. That, and it lacks the extensive Cyberlink software package, which you don't really need. But as it's SATA and can be found for \$89, it gets the Best Value award.



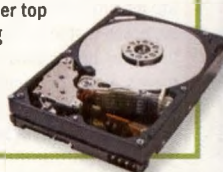
INTERNAL HARD DISKS

Hitachi Deskstar 7K1000

CONTACT Legend Corporation
ONLINE www.legendcorporate.com
PRICE \$599



This is the world's first 1TB drive available for PCs. APC's Labs Editor Nick Race tested it and said: "It's big storage! Seriously big. And it has the performance of other top drives in the market." Using perpendicular magnetic recording technology and a 32MB cache, this is the new top dog of hard drives.



EXTERNAL HARD DISKS

LaCie Biggie Disk Extreme 2TB

CONTACT LaCie
ONLINE www.lacie.com/au
PRICE \$1,695



So your friend has been boasting about their 1TB external like it's the bee's silicon knees? Pfft — LaCie's latest release packs 2TB into a single device, tossing in three different interface options of FireWire 400, FireWire 800 and USB 2.0. As far as external drives go, it doesn't get bigger than this. For now anyway.



Seagate Barracuda 7200.10 320GB

CONTACT Synnex
ONLINE www.synnex.com.au
PRICE \$225



It's quiet and packs plenty of punch, but be careful in tight enclosures: it's hot. Though the RRP for this drive is \$225, they can be found on the street for less than \$200. The 16MB cache model is fast enough for most uses, but if you're serious about video editing, splurge for a 10,000rpm drive.



WD My Book Premium ES 320GB

CONTACT Western Digital
ONLINE www.westerndigital.com
PRICE \$249 (320GB)



The WD My Book products have garnered quite a following. The new Premium ES adds eSATA support to provide greater throughput for external links — up to 300MB/s over USB 2.0's 60MB/s. Sporting some fancily named backup software, the Premium ES is priced well too.



USB ULTRA-PORTABLE

SanDisk Cruzer Micro 4GB U3

CONTACT SanDisk
ONLINE www.sandisk.com
PRICE \$69



A new-generation USB flash drive that, with 4GB of storage, lets you take full advantage of the new U3 storage technology (see Workshop on page 110). You can carry not just data, but also apps, including full suites such as OpenOffice. The Cruzer Micro fits easily in any pocket or keychain and comes with a retractable connector.



Sandisk Cruzer Micro

CONTACT Sandisk
ONLINE www.sandisk.com
PRICE \$25 (1GB)



Sandisk's Cruzer Micro is top-notch. The simple design includes a retractable USB connector and ships with a lanyard. The key includes the U3 software platform that allows users to install custom apps — just like Lexar's PowerToGo feature. It's a touch slower than its competitor, but it's also \$20 cheaper for the 1GB capacity.





SERVERS – SMALL BUSINESS

PowerEdge 2900

- CONTACT Dell
ONLINE www.dell.com.au
PRICE From \$3,487



This Dell is a beauty. It's dual-socket, dual-core and sports up to two of the new Intel Woodcrest Xeon 5140 at 2.33GHz with 1,333MHz FSB, backed by 2GB of DDR2 533 FB DIMMS and an 80GB SATA II hard drive. Dell offers a 3-year on-site warranty on this hugely upgradable server.



PRINTERS – HOME

Canon PIXMA iP5300 Bubble Jet

- CONTACT Canon
ONLINE www.canon.com.au
PRICE \$249



This is the perfect all-rounder for the home. It prints high-quality photos and churns through mono text documents at speeds of up to 31ppm, with quality approaching that of a laser. It can also print directly to CDs and DVDs. The IP5300 will deal with school projects, digital photos, documents,



MULTIFUNCTION – HOME

Canon Pixma MP830

- CONTACT Canon
ONLINE www.canon.com.au
PRICE \$549



The MP780's successor, the MP830 soundly beats the competition. It can print photo-lab-quality 4 x 6in home snaps and has all the gear needed by a home office, such as a copier, scanner and G3 fax machine (together with an automatic 35-page document feeder and duplexing ability).



HP ProLiant ML110 G3 SMB Bundle

- CONTACT HP
ONLINE www.hp.com.au
PRICE \$1,499



Not a real powerhouse, but the price can't be beaten. This unit is a single CPU Pentium 4 3.0GHz with 1GB of RAM and two 80GB hard disk drives. Though it won't break any speed records, it will suit a small business's needs. The server is bundled with Microsoft Small Business Server 2003 Standard Edition.



Epson Stylus C79

- CONTACT Epson
ONLINE www.epson.com.au
PRICE \$89



This is a cheap and cheerful printer that still delivers good results. With its four separate ink cartridges and extra-fine printing, it marries good print and photo quality with print speeds of up to 22ppm (black text) and 12ppm (colour). Be aware that your main ongoing cost will be the ink.



Lexmark X5470

- CONTACT Lexmark
ONLINE www.lexmark.com.au
PRICE \$249



This Lexmark is probably the first attempt to create a multifunction printer that actually looks stylish. On top of that, the machine also performs well, with print speeds up to 25ppm black and 18ppm colour, a 10-sheet automatic document feeder, plus PC-free photo, fax and copy capabilities.



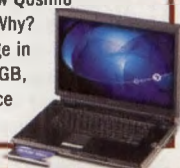
NOTEBOOKS – MEDIA CENTRE

Toshiba Qosmio G30

- CONTACT Toshiba
ONLINE www.isd.toshiba.com.au
PRICE \$5,499



Toshiba and Sony have been battling it out for a while now, and now the Qosmio and Vaio VGN-AR behemoths have been updated. Based on the specs, we can't go past the new Qosmio G30 for sheer outright luxury. Why? The G30 now has the advantage in a few key areas, including 320GB, 2GB of RAM and Nvidia GeForce Go 7900.



NOTEBOOKS – PERSONAL

Toshiba A200

- CONTACT Toshiba
ONLINE www.toshiba.com.au
PRICE \$2,299 (as reviewed)



The Toshiba outshone its rivals in our Labs tests with great Core 2 Duo performance and solid battery life. Unlike some heavier rivals, this 15.4in unit is a portable 2.7kg, and for the price it's stacked with features, including a 160GB hard drive, 802.11n networking, fingerprint reader and webcam. It also handles Vista with ease.



NOTEBOOKS – ULTRAPORTABLE

Toshiba Libretto

- CONTACT Toshiba
ONLINE www.isd.toshiba.com.au
PRICE From \$3,499



You had better make sure to look closely when shopping for a notebook or you might miss this one. At just 7.2in, the display is tiny (and the keyboard matches). Don't be fooled by the chassis though, there's plenty of grunt inside (and you can throw it into your backpack with room to spare).

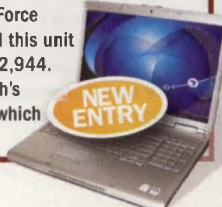


Dell Inspiron 1720

- CONTACT Dell
ONLINE www.dell.com.au
PRICE \$2,769 (as reviewed)



Dell's desktop replacement has solid battery life and performance, as you'd expect considering this is a Core 2 Duo machine with 2GB RAM. The clincher is the Nvidia GeForce 8600M GT, which pushed this unit to a 3DMark06 score of 2,944. It's better than last month's Acer Aspire 9425WSMi, which this unit replaces.

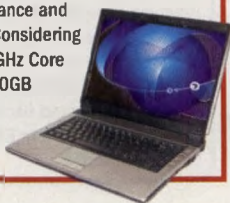


Excel M665N

- CONTACT Protac
ONLINE www.protac.com.au
PRICE \$1,899



This was the only sub-\$2,000 system in our recent Vista notebook roundup. It's fine for general desktop apps, though 3D performance and battery life aren't great. Considering you're getting a T7200 2GHz Core 2 Duo with 2GB RAM, 120GB drive and Vista Home Premium, this is good value.



Fujitsu LifeBook S6311

- CONTACT Fujitsu
ONLINE www.lifebook.com.au
PRICE \$2,499



It's bit heavier than the Fujitsu P7230 from last month, but this 1.7kg unit (weighs more with DVD drive) still provides good value. The base platform is probably a better bet for Vista, with Core 2 Duo, 2GB RAM and Intel 945G graphics. You get a 13.3in screen and a 120GB hard drive, plus a two-year warranty.



SMARTPHONES

BlackBerry 8707G

CONTACT Optus
ONLINE www.optus.com.au
PRICE \$999 outright (or plans)



We like the new 8800, but, for us, the improved interface and screen don't outweigh the lack of 3G and the cramped keyboard. We're sticking with the 8707G, though the 8800 and Samsung's BlackJack are viable alternatives. We like the 8707G's big screen, fine-tuned keyboard, 3G wireless and email service.



Nokia E61

CONTACT Nokia
ONLINE www.nokia.com.au
PRICE \$749



It's hard to fault Nokia's 3G "BlackBerry Killer": it has the comfortable BlackBerry form factor along with a QWERTY keyboard and fits comfortably in your pocket — plus, you can take your pick of push email service. There are two other killer features: inbuilt Wi-Fi and Nokia's new web browser.



WIRELESS APs & ROUTERS

Linksys Wireless-N WRT300N

CONTACT Linksys
ONLINE www.linksys.com.au
PRICE \$279.95



We're still not overly convinced that Draft N devices are the best devices in the long term, but if you want more speed for now, at least it gives you a chance of compatibility between brands and some hope of a firmware upgrade further down the track. The WRT300N has the best range among the Draft N routers we've tested so far.



TP-Link TL-WR541G

CONTACT Anyware
ONLINE www.anyware.com.au
PRICE \$75



In our tests the TL-WR541G delivered solid connections at the same range as routers costing much more. It has the usual four-port 10/100 Ethernet switch plus regular features such as a (relatively simple) firewall, access controls, WPA2 authentication, DHCP and port triggering.



ADSL2+ MODEM/ROUTERS

Dynalink RTA1025W

CONTACT Dynalink
ONLINE www.dynalink.com.au
PRICE \$179



This modem is a bargain at \$179. It performed well in our ADSL2+ and wireless tests and was also a strong performer in Annex M tests. The only area for improvement is long-range wireless, where the 1025W only managed 800Kbit/s, but this won't be a significant concern for most people.



Dynalink RTA1046VW

CONTACT Dynalink
ONLINE www.dynalink.com.au
PRICE \$279



Performance is nearly as good as the 1025W, but for your extra \$100 you get two inbuilt VoIP ports for you to connect standard phones to and make two calls at the same time. And if you want the fastest possible modem at 1KM, this is it: 19.85Mbit/s.



VOIP ADAPTORS

Netcomm V300

CONTACT NetComm
ONLINE www.netcomm.com.au
PRICE \$199



Low upstream speeds on most broadband connections mean QoS support makes a big difference to how you sound during a VoIP call. In APC's testing, the V300 delivered good voice quality with minimum impact on data traffic. It also lets you use one handset for VoIP and PSTN calls.



Netcomm V100

CONTACT NetComm
ONLINE www.netcomm.com.au
PRICE \$128



Connect the V100 to a power point, your network and a handset, and you're in business. Available as a generic model or preconfigured for certain VoIP providers, which makes it as simple as it gets. Some people prefer a box that allows more diddling around with configurations, but we're attracted to the simplicity.



HD DISPLAYS

Pioneer PDP-5000EX 1080p

CONTACT Pioneer
ONLINE www.pioneer.com.au
PRICE \$10,999



It's massive, ludicrously expensive, and has possibly one of the best pictures we've seen. Fast-moving images stay crystal clear, and don't be fooled by the picture in the shops — with the lights out, the contrast and definition is second to none.



Toshiba Regza 32WL68A

CONTACT Toshiba
ONLINE www.toshiba.com.au
PRICE \$1,999 (without tuner)



Toshiba's just-released Regza range raises the bar for LCD-based TVs. It comes in two versions, with a HDTV tuner and without. We've tested the 1080i/720p 32WL68A 32in model, which uses a 100Hz engine to address the traditional problem of motion blur experienced by LCDs.



GPS DEVICES

Garmin Nuvi 660

CONTACT GME
ONLINE www.gme.net.au
PRICE \$1,199



As a sat-nav, the Nuvi 660 is the cream of the crop. Stellar 4.3in wide-screen, large buttons and a user-friendly interface make it a breeze to use, and the main navigation screen is clear and uncluttered. Acquiring a GPS signal is speedy thanks to the flip-up antenna, and correcting wrong turns is also snappy.



ASUS S102 PND

CONTACT ASUS
ONLINE www.asus.com.au
PRICE \$549



The ASUS isn't perfect, our tests found it struggled to reroute quickly if we took a wrong turn. Still, we found it was super quick to acquire its initial satellite fix and calculate the initial route. The voice prompts are very helpful as well. You get 2D, 3D and night mode, and the maps are easy to follow, if basic.



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DAD & WIN!



The V8 Supercar-inspired styling and roar of the 307kW V8 engine are just a hint at the performance and wow factor that awaits the lucky winner of **HSV's** most popular model.

The Clubsport R8 features include:

- LS2 6.0-litre V8 producing 307kW and 550Nm
- HSV 'Performance' body styling, including stylised side vents incorporating indicators and exclusive twin intercepting rear tail lights
- 19-inch alloy wheels, HSV Sports Touring Suspension
- Six airbags, ABS, Electronic Stability Control, Traction Control and HSV-embossed four-piston performance braking system
- A host of luxury features including climate control, cruise control, Bluetooth compatibility and Blaupunkt 11-speaker 230 Watt stereo system



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Hardware *acceleration*

Don't fork out for a new PC — *James Morris* explains how you can dramatically improve your existing machine's performance.

The rapid pace of computing advances means the top-end PC you purchased a year ago starts feeling a tad behind the times. Fortunately, there's a raft of new technologies you can bolt on to make your system feel special again — and without having to replace the entire thing.

You may be considering a move to quad-core computing, or you could bump your PC up a generation or two with some mild and entirely free overclocking. Alternatively you may want to taste the future by moving over to a flash memory hard disk — which boots your PC in half the time and uses one tenth of the power. This month, we look at all of this — and more.

ADDING MORE CORES

Over the last couple of years, we've seen the transition to dual-core computing become almost universal. Even ultraportable notebooks are now being offered with dual-core processors, and although single-core PCs are still available, less than an extra tenner will get you a dual-core alternative. But having just become used to having a PC with two processors, Intel released its quad-core Core 2 around six months ago, and AMD is just about to launch its 'native' quad-core chip, the Phenom X4.

However, before you start feeling that your relatively recent dual-core system is already yesterday's technology, bear in mind that quad-core has only just arrived and software developers haven't made the most of two processing



FACT FILE

Where SDRAM fetches one bit of data per clock cycle, DDR fetches two, DDR2 fetches four, and DDR3 fetches eight. So DDR3 can theoretically reach twice the throughput of DDR2 for the same internal chip frequency. It also requires a lower 1.5V (compared to DDR2's 1.8V), so uses less power to achieve similar data rates.

cores yet, let alone four. Indeed, unless you're performing tasks like 3D rendering for film and TV on a regular basis — or plan to run lots of gruelling tasks at once — a quad-core CPU will get you bragging rights but not much else. Most everyday applications still remain single-threaded, so while having four cores provides added user responsiveness, two cores with a faster clock speed will generally be more useful than a couple of extra ones.

Still, if you do run multi-threaded applications, such as 3D renderers or video encoding, a quad-core processor could give you a significant boost. Even though the same LGA775 packaging is being used, with the same pin configuration from Pentium 4 days, you can't just plop an Intel Core 2 Extreme QX6800 in to replace your old 3.6GHz Netburst-based CPU. You'll at least need a motherboard based on Intel's P965 or 975X.

Nvidia's nForce 650i and 680i SLI chipsets also support Intel quad-core processors, but other vendors' chipsets that can accommodate Core 2 Duo processors don't go as far as the quad-core variety. A BIOS update may also be required to ensure that the processor will be recognised correctly. But even with the right chipset, your particular board revision may not have support. For example, Intel's own 975X board, the D975XBX (aka. Bad Axe) doesn't — only the revised D975XBX2 (aka. Bad Axe 2). So check with your manufacturer before taking the plunge.

Intel is also currently in the process of releasing a new chipset called 'P35', which now supports both a 1,333MHz frontside bus (for new Core 2 processors) and the next-generation DDR3 memory as well as DDR2. However, with the current scarcity of DDR3, most manufacturers are sticking with its predecessor for the time being. ASUS has released the premium P5K3 Deluxe with DDR3 support, but it's likely to take a while before DDR3 takes over from DDR2 in the mainstream, as was the case with DDR2 and DDR.

So, if the applications you use could benefit from a quartet of cores, the chances are a motherboard upgrade could be necessary. Abit's IB9 is one of the cheapest options (around \$130). This Intel P965 board supports Core 2 Extreme processors, up to 8GB of DDR2 memory, and has

a couple of PCI slots and a trio of PCI Express 1x for upgrades. But one thing it doesn't have is dual 16x slots for a dual-graphics configuration. For that you'll need to turn to the new P35 — either ASUS's P5K Standard or Foxconn's recently announced P35A-S, which has a similar feature set. The more venerable i975 remains a viable option, and Foxconn's 975X7AB is one of the best value at (\$200-\$250). These boards will only offer you ATI CrossFire dual graphics, however. For Nvidia SLI, the cheapest option is Nvidia's 650i SLI. As we noted in last month's more general feature on upgrading, MSI's P6N SLI is great value at around \$260.

Unless you've got some serious cash to burn, the basic Intel Core 2 Quad Q6600 makes a lot more financial sense than its more Extreme relatives. Although its four cores only run at 2.4GHz, at around \$650 compared to over \$1,300

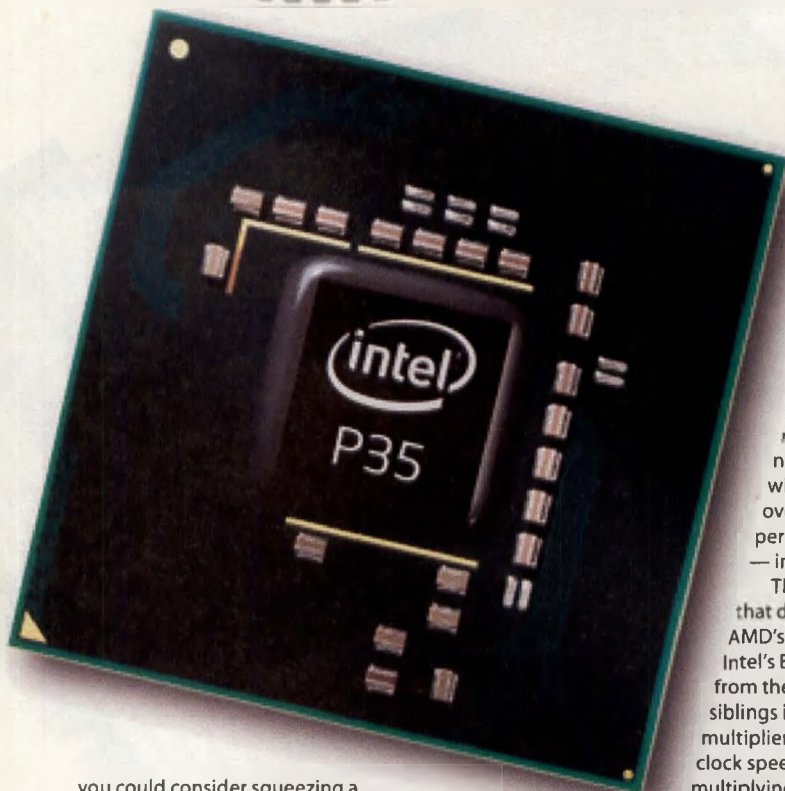
▶ The Intel P35 chipset supports DDR3 memory. Few motherboard vendors take advantage of this yet.

for the QX6700 and over \$1,500 for the QX6800, the Q6600 is much better value — and its price is set to drop further still when the Q6700 arrives. Until then, however, a quad-core upgrade is going to set you back over \$650 at the very minimum. Currently, AMD doesn't have a competitor either, although we'll have to see what the imminent Phenom X4 can muster when it arrives shortly.

OVERCLOCKING

Of course, if your processor is a fairly recent Core 2 Duo or Athlon 64 X2, you probably won't feel in a particular hurry to throw it out just yet. But





Intel's new P35 chip will speed things up.

FACT FILE

Intel is set to release three processors with 1,333MHz FSB in July – the E6850 running at 3GHz, the E6750 running at 2.66GHz, and the E6550 running at 2.33GHz. All will require Intel's P35 chipset and incorporate the LaGrande Trusted Execution Technology, although a 2.33GHz chip without the latter, called the E6540, is also due.

you could consider squeezing a little more from it. Five years ago, the idea of running your processor and memory beyond the official frequency was still the domain of the overly enthusiastic. But both Intel and AMD have been releasing products specifically aimed at this market for a few years now. Indeed, purchasers of AMD's Athlon 64 FX processors could almost be guaranteed the ability to run them at least one class higher than specified – so a 2.6GHz FX-55 would almost always run quite happily at the 2.8GHz clock of the FX-57. Similarly, Intel's Extreme ranges always have a little bit of extra headroom for increases in clock

speeds. Quite a number of manufacturers now sell systems with the overclocking performed for you – including Dell.

The key element that differentiates AMD's Athlon 64 FX and Intel's Extreme processors from their more pedestrian siblings is the unlocked multiplier. A processor's clock speed is derived by multiplying the frontside bus speed (or 'reference clock' in the case of AMD processors that have an integrated memory controller) by the clock multiplier. Everyday processors have the maximum value for the clock multiplier locked, but the premium Athlon 64 FX and Intel Extreme processors don't. So, you can bump up the speed of these processors simply by increasing their multipliers, and leave everything else in the system alone. They should be the cream of the manufacturing crop and have more headroom. However, even everyday processors usually have a bit more juice in them, if you're prepared

for a bit of trial and error. Since the multiplier is locked, your only choice is to increase the bus speed. For the best results, a lengthy process of trial and error is required – usually involving increases to the voltage applied to processor, memory and even the motherboard chipset itself. But if you don't have this much patience, you can usually get a worthwhile extra few megahertz without such elaborate antics.

Quite a few motherboards come with their own software utilities for changing clockspeeds. For example, Abit's mGuru BIOS-based overclocking features are also offered via a friendly Windows utility, and Gigabyte offers a similar EasyTune app. The options available via software are usually a subset of what can be found in the BIOS. And if the latter contains little overclocking, the chances are any Windows utility will offer even less. However, if your motherboard doesn't offer a configuration utility of this nature, there are some general ones available that work with a wide range of hardware. Hardcore overclocking enthusiasts often call upon ClockGen (www.cpubid.com/clockgen.php), due to its flexibility, but for the more faint-hearted SysTool (www.techpowerup.com/systool) is a little more friendly and has a great range of monitoring and testing facilities built in as well.

FLASH MEMORY HARD DISK

Super Talent SSD 16G25

• SUPPLIER Various
• PRICE \$600 (estimate)
• VERDICT ★★★★★

Flash memory has been waiting patiently in the wings to take over from mechanical hard disks for the best part of a decade now. But, until recently, it has been considered too expensive and specialised for mainstream usage. This is showing signs of change though, with the latest SSDs from the likes of US maker Super Talent. Super Talent's SSD16G25 is a 2.5in form factor 16GB disk. We put the SSD through its paces with Simpli Software's HDTach3RW. It managed passable throughput of

23.8MB/s read and 17.1MB/s write, but a rather stunning access time of 1ms – more than ten times faster than a regular hard disk. The true proof was when we loaded Windows XP, however, which we found booted about twice as fast as usual on average. The Super Talent also sports a Mean Time Before Failure in excess of one million hours – a similar amount to an enterprise-level hard disk and twice most consumer models. So not only is the Super Talent quiet and low power, but it's even durable as well. The viability of SSD for mainstream PCs is creeping ever closer. At around US\$500 for a 16GB model, Super Talent's version is still too expensive for most. But give it a year or two, and SSDs could be taking a more central role in our PCs.



GRAPHICS BOOST

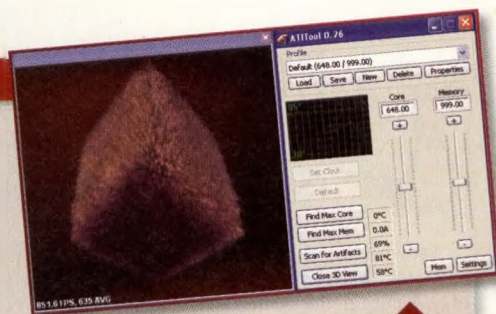
Squeezing MHz out of your graphics card is easier than overclocking.

Raising your processor clock speed has its dangers, though the benefits are faster performance for your system. Extra graphics card performance has a more limited effect — primarily for gaming — but is less likely to leave your PC unable to boot. It's also quite a bit easier to do.

Our favourite SysTool (www.techpowerup.com/systool), as well as offering processor overclocking, can be used with both ATI and Nvidia graphics to increase the core GPU and memory frequencies. As with CPU overclocking, proceed slowly, alternately increasing core and memory frequencies. To check settings, download a copy of 3DMark (www.futuremark.com) and run a benchmark. Watch the games demos and look out for glitches. If it looks OK, try a bit more. Once glitches appear, you've reached the limit. You may

find one setting will overclock considerably more than the other. We've seen Nvidia's GeForce 6600 run at nearly twice its original frequencies, providing around 30% extra gaming performance, but memory couldn't be pushed so far.

SysTool isn't the only graphics overclocking utility. For ATI graphics cards, ATITool (www.techpowerup.com/atitool) provides overclocking, plus profiles so you can save different clock configuration settings — perhaps one overclocked for gaming, and one underclocked to reduce heat output when not running stressful 3D apps. It can automatically find your maximum core and memory settings, but it tests until failure, so you have to reboot to find out the last setting it found that worked. Another option compatible with either is PowerStrip (entechtaiwan.com/util/ps.shtml).



Utilities such as ATITool let you get that bit more from your graphics card.

Things are even easier for Nvidia graphics. Earlier versions of Forceware drivers could be customised with Coolbits 2.0, a registry setting that enables overclocking. Later drivers require nTune 5 (www.nvidia.com/object/ntune_5.00.06.06.html), which adds Performance and Stability tabs. Both offer a Find Optimal button, to ascertain the highest clock speeds possible.

Once you've installed SysTool, it should detect your motherboard automatically, unless it's a fairly recent model. For example, our Intel D975XBX2 was misrepresented as its D975XBX predecessor, and, as a result, many important options weren't available. But most popular boards should be available. Assuming your board is correctly detected, you can try raising the FSB slightly using the slider in the CPU Overclocking section. First, click the Read button to load your current values, then ensure these conform to the correct bus and processor frequency settings of your PC. Assuming they do, you can try increasing the FSB in increments of 5MHz by moving the slider along and hitting the Write button. SysTool has its own stability test to help you find out if your new settings will survive long-term usage, although its automatic Start Find Max system can be a bit hit or miss.

Make sure you're not running any other software, and back up anything important from your PC before starting. Although there is a risk of damaging your PC, it's not that great if you only experiment with small increments, and it's worth the effort if you can run your processor a level or two above its standard specification. Most PCs will have at least five per cent extra

performance available, and usually 10 per cent — for example, an Intel Core 2 Duo E6600 running at 2.4GHz will generally run perfectly happily at 2.6GHz. You can also make some small hardware upgrades to help even more...

IMPROVED COOLING

Although there's usually a little bit of overclocking headroom available in most PCs,



ALTHOUGH THERE IS A RISK OF DAMAGING YOUR PC, IT'S NOT GREAT IF YOU ONLY EXPERIMENT WITH SMALL INCREMENTS

you can significantly improve your chances of reliable results with a cheap upgrade to your system cooling. If your PC was shipped with a standard 'reference' processor cooler, it's highly likely that this will be both much noisier and significantly less efficient than the best units currently available.

Over the last couple of years, processor heat sinks have developed some pretty insane designs. Complicated lattices of heat pipes and gigantic fin arrays, allied with desktop-sized fans

up to 120mm in diameter, have been combined into monstrous units, some of which need their own proprietary connection plates, requiring you to remove your PC's motherboard to fit them. Despite their exotic designs, not all of these are any better than the more modest reference units that come with a retail processor.

However, buy the right unit and you could be looking at both a quieter and a cooler-running

PC, plus you don't have to spend a significant amount either. Our favourite is actually a total bargain. Arctic Cooling's superbly engineered Freezer 7 Pro (see overleaf) doesn't have the 'bling' of some of the more outlandish units, and it has been our favourite for some time now, but it still does the job better than most. While some of the most exotic coolers require great feats of manual dexterity to install, the Freezer 7 Pro pops on easily, just like a regular LGA775 sink. Best of all, it's scarcely more than \$40.



IT Business Analyst / Project Manager

The Dubai Financial Services Authority (DFSA) is the integrated regulator of all financial and ancillary services undertaken in or from the Dubai International Financial Centre (DIFC) - a purpose-built financial free zone situated in Dubai, United Arab Emirates.

The DFSA is now seeking to recruit an IT Business Analyst / Project Manager who can successfully work on both business and technical projects as required. Candidates must have a proven track record of managing several IT projects from end to end. The ability to demonstrate experience in implementing finance related IT projects would be desirable for this position. Candidates must be able to demonstrate a thorough understanding of strict methodologies such as Prince/Prince 2, for which certification is also desirable. Managing and keeping up to date records of IT technical documentation is also a requirement, and candidates must have implemented and/or followed a formalised change management framework.

Successful applications will have a relevant degree with approximately 3 years experience preferably within a financial services or multinational company.

The DFSA provides extensive support and ongoing training and development to optimise its employee's potential, in addition to excellent working conditions and competitive remuneration packages incorporating expatriate benefits. Interested applicants are asked to forward their CVs and details of current remuneration packages to recruitment@dfsae

Applications are to be received no later than 15 September 2007 and should be clearly marked "DFSA - IT PM/BA Application". CV's received after this date will not be considered. For information about DFSA please visit www.dfsae



ALTHOUGH FLASH THUMB DRIVES HAVE PLUMMETED IN PRICE, FLASH MEMORY IS STILL A LOT MORE EXPENSIVE

Sadly, AMD processor users can't take advantage of the Freezer 7 Pro, as it's LGA775 only. Arctic Cooling's alternative here is the Freezer 64 Pro, which is similarly efficient but quite a bit more fiddly to fit due to a stiffly sprung mounting clip, although it still doesn't require motherboard removal. Easier to install

Although pricey, Zalman's CNPS9700 LED is a great cooler for either Intel or AMD processors.

and even better for AMD processors is Zalman's CNPS9700 LED, although it costs quite a bit more (around \$100). Although the Zalman is a tad noisy on full speed, it comes with a rheostat allowing you to turn it down to around 1,200rpm. It's still amazingly efficient even at this speed, and virtually inaudible. Strangely, although the Zalman is also compatible with LGA775, we haven't found it to be quite so good as Arctic Cooling's Freezer 7 Pro, unless you run it on maximum. It also requires a mounting kit for LGA775 motherboards, so you do have to dismantle your PC to fit it.

When installing a processor-cooling upgrade, remember to clean off any old heat compound and reapply fresh thermal interface material (TIM) before putting on the new heat sink. TIM is designed to bake into the required shape once applied and heated, so old material may not fill the gaps quite so well with a new cooler. The Arctic Cooling and Zalman sinks mentioned above include a small tube of TIM.

UPGRADED DRIVES

Processors aren't the only factor capable of affecting everyday performance. System memory obviously has an impact too. But other

FACT FILE

While hard disks must wait until the area of the platter containing the required data has spun to the read/write head, flash memory can access any part of its capacity equally quickly. Average access times are faster, speeding data retrieval involving small chunks of information scattered in different places.

than ensuring that you have at least 1GB for Windows XP and 2GB for Windows Vista, this remains a relatively prosaic area when it comes to the potential for upgrade. Main storage, on the other hand, is starting to look a little more interesting.

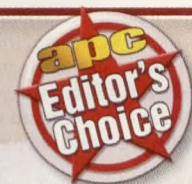
Unless you bought a premium PC to begin with, the chances are you'll have a single, standard SATA drive as your main storage disk. You could consider upgrading this with a super-fast premium alternative, such as Western Digital's Raptor X, but you really won't notice a significant performance increase in everyday use. If you're looking to make your PC a little faster to boot, you could instead consider replacing your main system drive with something far more elaborate, such as a flash memory-based hard disk, also known as a Solid State Disk (SSD). Although these drives don't offer the raw throughput of hard disks yet, they don't need to spin up, and consequently access times can be 100 times less than an average hard disk. For example, Samsung's SSD, the 32G5APP, was found to boot Windows XP twice as quickly (as compared with a generic 200GB hard disk), with the software applications loading similarly twice as quickly as expected.

Samsung is far from the only company offering products in this area, too. US-based maker Super Talent also sells 2.5in SSDs up to 64GB in capacity. Even more tellingly, Super



SUPERCOOL PROCESSOR HEAT SINK

Arctic Cooling Freezer 7 Pro



• SUPPLIER Arctic Cooling

• PRICE \$40

• VERDICT ★★★★★

Not all heat sink/fan combos (HSF) are made the same. A good engineering design can strip tens of degrees off the maximum effects of the more basic models. The Arctic Cooling Freezer 7 Pro may not look as extravagant as some of the designs out there, but its engineering is very sound indeed. Six heatpipes draw the thermals to an array of horizontal fins, across which the 92mm fan draws air transversely. The HSF is aimed solely at LGA775 processors, however, as Arctic Cooling has a different product called the Freezer 64 Pro for AMD

CPUs. Unlike many exotic coolers, the Freezer 7 Pro is as easy to install as Intel reference heat sinks — just pop the four lugs in place. The only thing you need to be careful of is ensuring that it's the right way round. This means the fan draws air in the same direction as your chassis fan system. The Freezer 7 Pro improves on the reference design twofold. Not only does it keep the CPU around 10°C cooler under load, but it's also significantly quieter. Even our Intel Core 2 Extreme QX6700 remained under 40°C when idle, and rarely breached 50°C even under heavy load. Whether you're overclocking or just want a quiet life, Arctic Cooling's Freezer 7 Pro is both a top performer, and, at around \$40, it's undeniably an absolute bargain as well.



SAMSUNG
Flash SSD (Solid State Disk)

32G Byte

MCAQE32G5APP-0XA
2.5" SSD 5.0V ATA5 UDMA66
Made in Korea

Solid state disks, such as Samsung's 32G5APP, offer faster boot times, silent operation and low power consumption.

Hybrid hard disks have large volume platters, with the added flash memory improving data access speeds.

Talent is also now shipping 3.5in drives up to 128GB in size (the SSD128G35), which is beginning to be a useful size for a storage device aimed at a full operating system (as well as for installing all your programs on).

However, although flash thumb drives have plummeted in price, flash memory is still a lot more expensive per GB than a hard disk. You will find that you still need to resort to mechanical hard disks for larger amounts of storage for a few more years yet.

If you'll only need this data occasionally, you could instruct Windows' power settings to spin your hard disks down. This is only something that's really worth considering if you need to

access the disk just a few times a day — any more and it becomes a costly and wasteful exercise. Setting the disk to turn off every few minutes and have it spin up too frequently also presents a number of downsides. For a start, hard disks use a lot more power spinning up than staying on, so realistically you may not be saving any power. Added to that, they can also be somewhat noisier during the spin-up phase.

They have a limited number of start/stop cycles, too — Seagate's Barracuda 7200.10, for example, is rated for at least 50,000 cycles. While that may seem a lot as a cold statistic, if the drive is spinning up on average 50 times a day, it may only last a couple of years. A more sensible

option might be to store your large data on an external hard disk or Network Attached Storage (NAS), and simply leave it off when you're not using it.

If you bought your PC less than three years ago, you're probably pretty reluctant to get a new one just yet. In this feature, we've shown how there are many ways you can make it last longer — some more drastic than others. Whether you want to bring your system bang up to date, or just squeeze that little bit extra from it, there are plenty of options available. There's a reason why the P in PC stands for personal — it's a device specially designed for you to customise exactly how you want. **ETC**

FUTURE-PROOF MOTHERBOARD

Foxconn P35A-S

• SUPPLIER Foxconn

• PRICE TBA

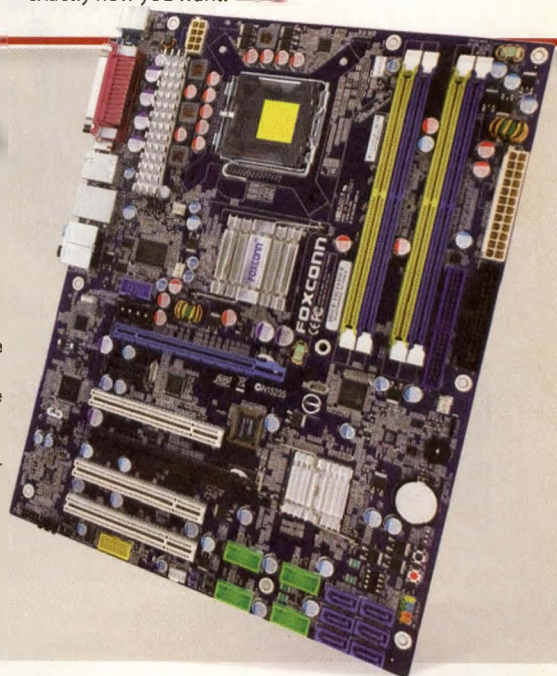
• VERDICT ★★★★★

Intel's new P35 chipset, codenamed Bearlake, has two primary reasons for existence. One is that it adds support for processors with a 1,333MHz frontside bus, which should be imminent by the time you read this. Second, it supports DDR3 memory, the next in the line of the clock-multiplied DDR memory dynasty.

However, Foxconn has taken the decidedly cautious route when it comes to memory with the P35A-S. So, although you'll have support for the latest Core 2 processors, you must still stick to

DDR2 memory with this board. This might hold you back in a couple of years' time, but it does make sense if you're buying a board right now, as DDR3 memory will be at a premium (for little performance benefit) for some time to come.

Otherwise, the Foxconn can be considered to be a thoroughly respectable high-end board. Twin 16x PCI Express slots make CrossFire a possibility — which could be useful now ATI's Radeon HD 2900XT has arrived at a relatively modest price. The S model also includes the RAID-capable version of Intel's ICH9 Southbridge, with six SATA 2 ports to take advantage of it. Overall, if you're looking to upgrade your system for quad-core support, you'll find the P35A-S has a wise balance of features.





Double Data Rate 3

What makes the new memory type tick, and is it just a necessary evil?

Nathan Davis whips out the cattle prod and pokes away.

Every computer needs its fair share of randomly accessible memory, reason being, hard drives are slightly slow — some might say incomparably so. For example, a stick of archaic SDRAM transfers data at over one gigabyte per second, while the fastest hard drives today are lucky to reach 90 megabytes per second.

Thankfully, system memory just keeps getting faster and the next phase of such memory is fast firing our way in the form of DDR2's successor, aptly-named 'DDR3.' Not to be confused with the unrelated graphics card memory, GDDR3, it's primarily an evolutionary increment of the DDR series, but it is nonetheless, an impressive upgrade. Necessary, if only because it's what every new chipset on both sides of the processing fence will soon expect.

We spoke with Kingston to find out the nitty-gritty. They told us DDR3 "is the continued evolution of DDR/DDR2 technology."

So why was DDR3 even created — why not just upgrade DDR2?

"New processors drive faster memory speed," Kingston tells us. "As dual, quad and future multicore processors become more prevalent, more memory bandwidth is needed to keep up." Inherently, for what it was designed, DDR2 just wasn't going to fit the bandwidth bill.

Compared with DDR2, "DDR3 memory at 1,066MHz is already delivering 25% more bandwidth," which is the stock speed at which

sockets. They still feature 240 pins, but the notch in the PCB on DDR3 memory is positioned further out from the middle in an effort to prevent curious cats from even trying.

Aside from that, the main electrical difference is the drop in voltage that's needed to keep the volatile DRAM memory alive and remembering.

"The power consumption on semiconductor devices is

"Early testing from some of our technology partners show approximately 5-7% more battery life when DDR3 is used in place of DDR2, and all other hardware is the same." Small, but every gained minute counts.

As an inherent benefit of using less power, DDR3 memory runs cooler in comparison to DDR2. Heatspreaders aren't presently required, although we're promised this will quickly change



DDR3 IS PRIMARILY AN EVOLUTIONARY INCREMENT OF THE DDR SERIES, BUT IT IS, NONETHELESS, IMPRESSIVE

manufacturers are, as of this past May, releasing DDR3 memory. "As 1,333 [MHz] and 1,600 [MHz] speeds come about, memory performance will increase further."

In terms of physical design, as with the jump from DDR to DDR2, DDR3 and DDR2 memory modules differ enough internally that they've been designed specifically not to slot into the other's DIMM

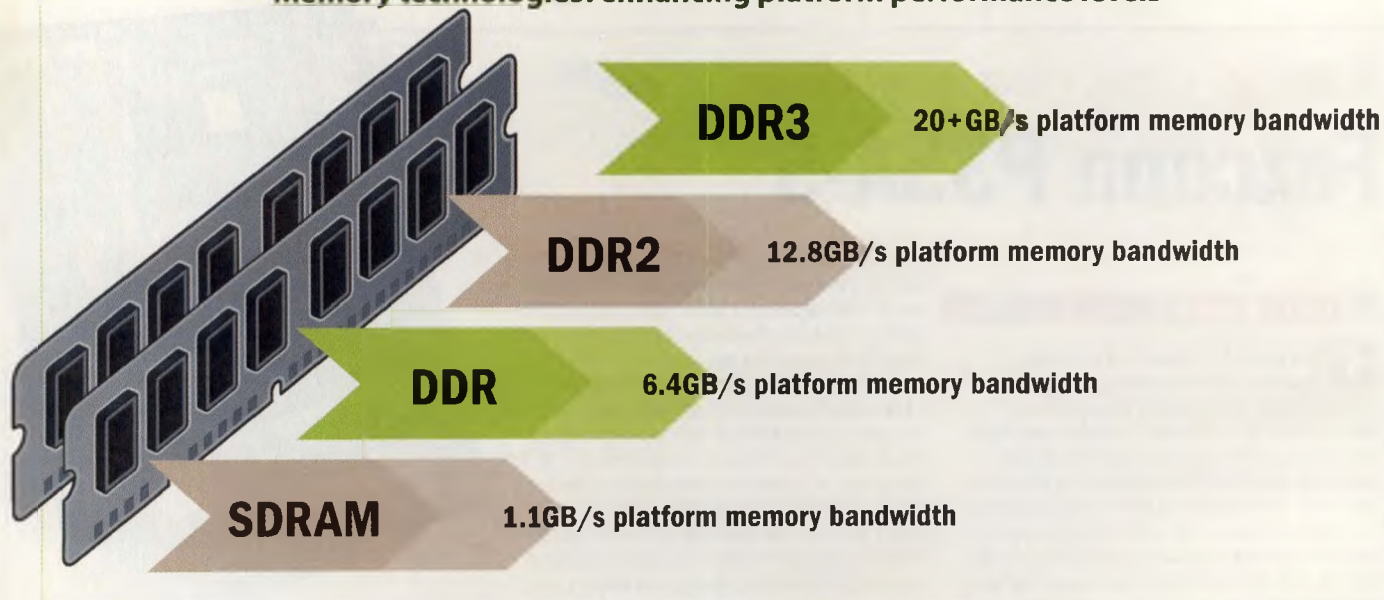
proportional to the square of [the] applied voltage," explains Kingston. "The applied voltage is 1.8V for DDR2 and 1.5V for new DDR3. Therefore, it will be about 30% power saving due to the reduced applied voltage when the devices are running [at] the same speed frequency."

This carries with it a reasonable advantage for mobile computing.

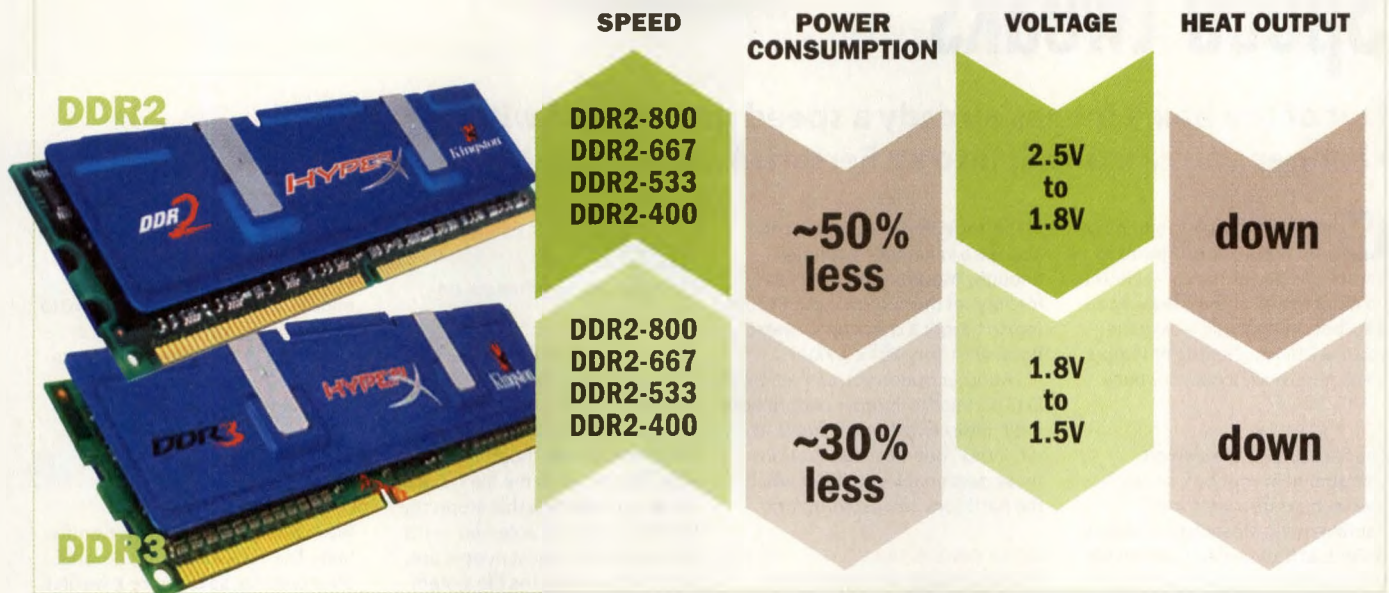
when the faster performance modules hit town.

Ever wonder how your system's BIOS just tends to know precisely the right settings for a given stick of system memory? Just like in the past with most modern sticks of system memory, there's a little black EEPROM (Electrically Erasable Programmable Read-Only Memory) chip on all DDR3 memory modules

Memory technologies: enhancing platform performance levels



Memory technology improvements: from DDR2 to DDR3



called the 'Serial Presence Detect.' As a non-volatile storage chip, it stores info about the memory module to which it's attached.

Upon boot, the memory controller — which AMD has planted directly on all of its recent CPUs, and for Intel CPUs is still found on the north bridge — fires out a discovery message for the Serial Presence Detect chip. It then responds and lets the memory controller know all about its memory module's various configuration settings, such as timing parameters, and identification — and this information then finds its way into your machine's BIOS.

Placing these useful chips onto system memory modules became standard practice in the early days of DDR and even the later days of common SDRAM. No doubt people

were tired of manually setting up the correct timings themselves.

You can generally spot this little chip on most uncovered sticks of memory. It's a little black square that is attached directly to the memory module's PCB. It is much smaller than an actual DRAM memory chip, but it's visibly much larger than the tiny capacitors and resistors also found on the PCB.

Not only is it a mighty useful chip, a memory module can actually function perfectly fine should a Serial Presence Detect chip fail to do its job, due to being faulty, damaged, or just not there. If there is no response, the memory controller will give up and the memory settings will be automatically set to something fairly laid-back, to be on the safe side. All the same, we don't recommend ripping it off a

perfectly functional stick of memory — unless it's in the name of science.

The actual DRAM memory chips store data as they always have — a memory cell holds either a positive charge or no charge, thus representing a binary 1 or 0, respectively. The difference is that the charge is now 1.5-volts.

According to Kingston, DDR3 memory bandwidth should shoot well past 20GB/s, at least in dual-channel mode. How do they come up with these numbers? Well, memory bandwidth is calculated by multiplying the memory bus width, or the amount of data that memory can move per clock tick — which is 64-bits, or 8-bytes — with the frequency of the memory bus: the speed of said tick, then by dividing the result by 1,000 for GB/s. If they're operating in dual-channel

mode, double this number, and you'll have the theoretical memory bandwidth. For example, at least two modules (so as to operate in dual-channel mode) of 1,600MHz DDR3 memory can theoretically pump out data at a healthy rate of 25.6GB/s (8 x 1,600 x 2 / 1,000).

With all the wonders of a new memory type, there is, however, one main drawback. As Kingston says, "latency is larger for DDR3 than DDR2." A DDR2 stick of 1,066MHz memory might feature CAS latencies of 5-5-5, while a DDR3 equivalent can sit at 7-7-7. These latencies increase with the operating frequency of the memory modules. But this is just par for the course, as the same occurred with the jump from DDR to DDR2.

We're told we can expect to see DDR3 in common use early next year. **ETC**

RAMMING AHEAD

We asked a representative of Kingston whether they believe system memory will ever be based around a longer-term non-volatile memory type which doesn't require a constant charge to store data. "Hard to say," we were told, continuing "current NAND... flash cells have a life expectancy of approximately 100K operations before they wear out, making it difficult to implement as main system memory." NAND memory is the most common

form of solid state non-volatile memory, and is exactly what you'll find in a typical USB flash drive.

"Perhaps as flash memory technology continues to evolve, there may come a time when non-volatile memory could become the main component of system memory for specialised computers, embedded applications and similar systems."

Smell that? It's the sweet scent of instantly bootable computers.



Non-volatile memory looks to be the way of the future once DDR3 has had its run.



Speed tweaks

Out of the box, Linux is already a speed demon, but with some simple changes you can turn it into an Ferrari. Ashton Mills shows you how.

Windows has a plethora of tips and tricks and programs to improve its performance — Linux is no different. All of the following are distribution-agnostic — whether you use Ubuntu, Gentoo or Puppy Linux, these will boost your baby.

FILE SYSTEM

The hard drive is the slowest component in your box, so any tweaks here are a welcome improvement. Most distros default to Ext3, as it's a fast and proven file system. However, there are few tips for improving its performance further. Open a terminal and type:

```
sudo tune2fs -o journal_data_
writeback /dev/[your ext3
partition]
```

This enables the Ext3 journal_data_writeback mode over the default journal_data_ordered. This is saved as a property of the file system on the partition itself, and you can view the change with:

```
sudo tune2fs -l /dev/[your ext3
partition] | grep options
```

And it should return with the new data writeback set. Run the command without grep to see the full tune2fs output for your partition, which lists other interesting data.

For example — an Ext3 partition will automatically be checked on a regular basis during bootup, specified by the 'Maximum mount count' value. For large drives, this can take quite a while. And for desktop systems, which are often rebooted every day, the maximum mount count can be reached relatively quickly. If you wish to space out the disk checks further, you can set this to a higher value, for example:

```
sudo tune2fs -C 50 /dev/[your
ext3 partition]
```

In the 'tune2fs -l' output you can also see a value called, funnily enough, 'Mount count'. You can forcibly set the current mount count (eg. to trigger a check on the next boot) with 'tune2fs -c [value]'.

Another option you can set on an Ext3 partition to improve performance is dir_index with 'sudo tune2fs -o dir_index', but most distributions these days enable dir_index when the partitions are first formatted.

TWEAKING FSTAB

There's actually one more step to ensure journal_data_writeback sticks. From the terminal, type:

```
sudo nano -w /etc/fstab
```

This edits your file system table. If you've never seen this file before, don't panic, it's simpler than it looks. Scroll down until you come across the entry for '/', your root partition. On this line you will see the device where the root partition is mounted, the file system being used ('ext3') and, after this, the mount options. Here, add 'data=writeback'. So it looks something like this:

```
/dev/sda1 / ext3
noatime,data=writeback 0 1
```

Then quit nano to save the file with Ctrl+X. You may have other mount options there as well, depending on your distribution. If your distribution didn't already add 'noatime', do so now. This prevents the file system updating metadata that stores the last time a file was accessed — it's not information most people use, and it slows down the file system as this data is updated every time a file is accessed. Also, you can add 'nodiratime' to prevent, naturally, timestamp updates to directories that are accessed, although the gains here will be smaller.

If you're an uber-geek and use another file system like Reiserfs, Reiser4, XFS or JFS, the 'noatime' and 'nodiratime' mount options can also be set for these file systems.

RENICE X

Linux processes are priorities by their order of 'niceness'. A process with a high nice level is, well, nice enough to step out of the way if a

process with a lower level needs attention. Most processes on a system default to '0', smack in the middle (the allowable range is -20 to 19, but don't ever set anything at -20). You can, however, tell Linux to prioritise X — your GUI — to increase its responsiveness like so:

```
sudo renice -10 `pidof Xorg`
```

We're doing something a little nifty here. The 'renice' command works off process ids, so to renice X we first need to find what process id it has. The 'pidof' (process id of) command does this for us, and the two commands can be combined to execute the renice in one line.

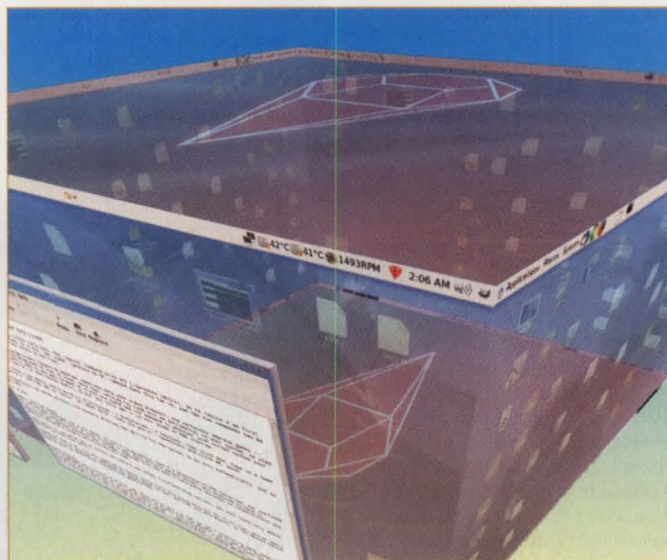
Renicing X can provide a more responsive desktop, sometimes help with video playback, and certainly improve games — not that you'll be doing much of that on Linux. Note that renicing too high will be detrimental to your system, so stay with '-10'. Finally, what if you want to make it stick? You could add the command to whatever init script system your distro uses or, if that sounds Swahili to you, you could add it to your Gnome or KDE startup.

For Gnome (that's you Ubuntu users), do this: click System > Preferences > Sessions, then click New. Type in a name like 'Renice X' and then put in 'renice -10 `pidof Xorg`' (note the use of 'backticks') and click OK. Done!

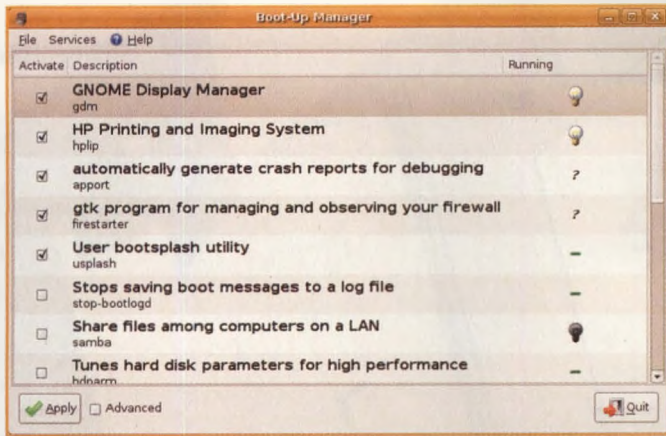
Some very new kernel patches are actually offering the ability for the kernel to do this automatically. And on that note...

COMPILE YOUR OWN KERNEL

Yes, you can play developer for a few hours. If you're using Gentoo, then I'm preaching to the converted. For everyone else, it's most certainly worth it. Even sticking to your distributions default kernel but electing to have it compiled for your specific processor (P4, Core 2 Duo, Athlon 64 etc.) can have a noticeable increase in responsiveness and speed over the generic kernels many



Renicing X can help responsiveness.



distributions ship. Additionally, if you delve into it further and explore the kernel's configuration options, you will learn more about Linux than you ever have before.

Although not hard to do, it's very important to follow instructions when doing this for the first time, and we don't have space to cover them here. A good guide for Debian-based systems, including Ubuntu, is the Ubuntu kernel compiling guide at <http://ubuntuforums.org/showthread.php?t=311158>.

DISABLE SERVICES

Just like Windows, there are startup services your distribution will run that you don't necessarily need. However, note that disabling the wrong service in Linux can be harder to recover from than Windows, so if you don't feel confident to know what to remove, leave them be. If you do, head to System > Administration > Services in Gnome and take a peek. You'll also find a list of boot-initiated services in System > Administration > Bootup Manager.

SWAPPINESS

Linux has awesome memory management and will rarely use swap unless it really needs to. However, you can still tweak this behaviour and ensure your system doesn't swap out to disk until it absolutely has to, like so:

```
sudo nano -w /etc/sysctl.conf
```

Scroll to the bottom and add:

```
vm.swappiness=10
```

This is best used on systems with 1GB or more memory. If you have

less, the default setting of 60 will likely work better for you.

NETWORK TWEAKS

Before you save the sysctl file, there are some other settings you can add. If your system is connected to broadband, the following will help improve network throughput:

```
net.core.rmem_default = 524288
net.core.rmem_max = 524288
net.core.wmem_default = 524288
net.core.wmem_max = 524288
net.ipv4.tcp_wmem = 4096 87380 524288
net.ipv4.tcp_rmem = 4096 87380 524288
net.ipv4.tcp_mem = 524288 524288 524288
net.ipv4.tcp_rfc1337 = 1
net.ipv4.ip_no_pmtu_disc = 0
net.ipv4.tcp_sack = 1
net.ipv4.tcp_fack = 1
net.ipv4.tcp_window_scaling = 1
net.ipv4.tcp_timestamps = 1
net.ipv4.tcp_ecn = 0
net.ipv4.route.flush = 1
```

Then Ctrl+X from nano to quit and save the file, which will be executed on the next boot.

FIREFOX

The staple of web browsing — there are two excellent tweaks we can do here.

Firstly, you may have noticed that the buttons and forms on web pages are rather ugly compared to Firefox on Windows. This is a result of the underlying GTK libraries, which haven't been used very well.

The boot up manager lists boot-time services not found in the Services dialog.

Load www.apcmag.com faster than ever before!



Firefox 3.0 will fix this, but, in the meantime, head here at the Ubuntu forums: <http://ubuntuforums.org/showthread.php?t=369596>.

Also, grab the latest Firefox Widgets package, decompress it and run the install executable inside. It'll automate the whole process for you, and buttons and forms will look a *whole lot nicer*. If you're installing this on other distributions, you may need to edit the install scripts to point to where Firefox is installed. For Gentoo — for example — replace the path to 'firefox' with 'mozilla-firefox'.

The next tip is a common one: optimise Firefox's network settings. You can do this manually by looking up each of these settings in Firefox itself from the 'about:config' dialog in the URL bar, or append them to the end of your preferences (prefs.js) file:

```
user_pref("network.http.pipelining", true);
user_pref("network.http.proxy.pipelining", true);
user_pref("network.http.pipelining.maxrequests", 8);
user_pref("content.notify.backoffcount", 5);
user_pref("plugin.expose_full_path", true);
user_pref("ui.submenuDelay", 0);
```

```
user_pref("content.interrupt.parsing", true);
user_pref("content.max.tokenizing.time", 2250000);
user_pref("content.notify.interval", 750000);
user_pref("content.notify.ontimer", true);
user_pref("content.switch.threshold", 750000);
user_pref("nglayout.initialpaint.delay", 0);
user_pref("network.http.max-connections", 48);
user_pref("network.http.max-connections-per-server", 16);
user_pref("network.http.max-persistent-connections-per-proxy", 16);
user_pref("network.http.max-persistent-connections-per-server", 8);
user_pref("browser.cache.memory.capacity", 65536);
```

You can find your preferences file in mozilla/firefox/[your profile]/prefs.js from your home directory. Most distros don't show hidden directories in the file explorer, so if you don't want to navigate from the command line, for Gnome, open up a Nautilus window and select Edit > Preferences and tick 'Show hidden and backup files'. [BUC](#)



apc exploding tech

Canon imageCLASS MF4150

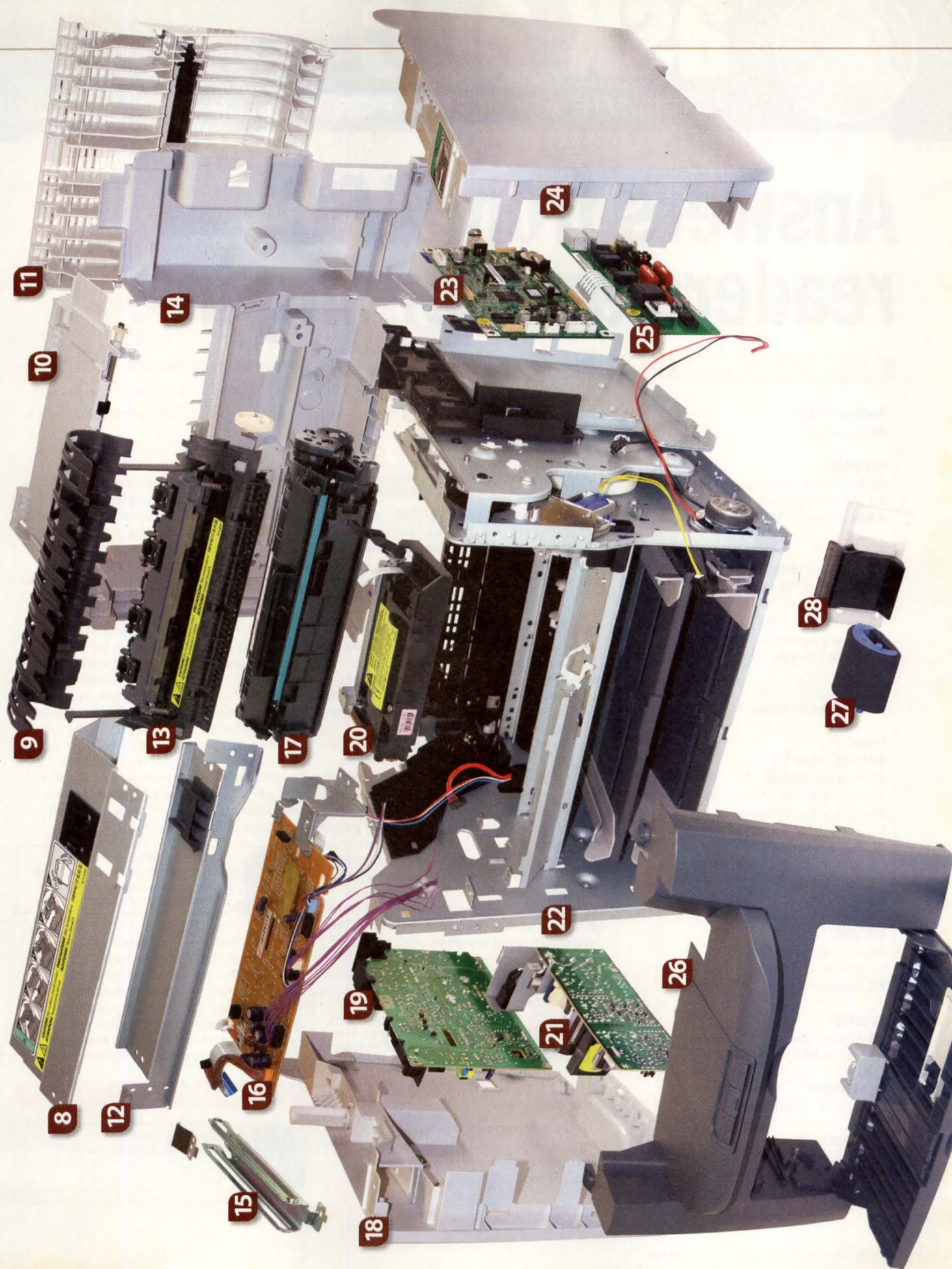


This month, we explode Canon's imageCLASS MF4150, a space-saving laser printer/scanner/fax/copier that takes up only 39 x 53.2cm of desk space.



- 1 Automatic Document Feeder
- 2 Control Panel
- 3 Copyboard Glass Assembly
- 4 Copyboard Glass
- 5 Contact Image Sensor
- 6 Reader Assembly Frame
- 7 Cartridge Cover
- 8 Fixing Assembly Cover
- 9 Inner Feed Guide
- 10 Paper Feed Cover
- 11 Duplexing Cover Unit
- 12 PCB Cover
- 13 Fixing Assembly
- 14 Rear Cover

- 15 Reader Stay
- 16 DC Controller PCB
- 17 Toner Cartridge
- 18 Left Cover Assembly
- 19 High Voltage PCB
- 20 Laser Scanner
- 21 Power Supply PCB
- 22 Main Frame
- 23 Scanning Control PCB
- 24 Right Cover Assembly
- 25 Network Control Unit PCB
- 26 Front Cover
- 27 Paper Pickup Roller
- 28 Paper Separation Pad





ask apc

ASK THE APC TRIBE FOR IT HELP AND ADVICE

HARDWARE

WINDOWS

SECURITY

LINUX

Answers from APC readers are coming in

QUESTIONS ANSWERED

PROGRAMMING

84 Learn how to program

HARDWARE

85 External powered IDE CD-ROM

85 DVORAK keyboard

85 Boot from a USB stick

WINDOWS

86 Index your PDFs

86 Having trouble dual-booting XP and Vista

86 What happens when an OS installs itself?

87 Strange clicking noise

OFFICE

87 Outlook form errors

LINUX

88 The Crontab file

88 All-powerful Grub

87 Understanding Grub partitions

89 Retaining permissions

NETWORKING

88 Network timeouts under Vista

89 Wi-Fi connectivity

86 Wireshark packet sniffer

INTERNET

90 One web page with multiple addresses

91 Open ports under Windows XP

SECURITY

91 Apple viruses

89 WEP or WPA encryption

MULTIMEDIA

91 Long FAT file names

PHOTOGRAPHY

90 RAW image format

The first questions posed by APC readers last month have been answered by other APC readers. One question in particular, on how to learn programming, got many replies. We've picked the three best responses.

PROGRAMMING

LEARN HOW TO PROGRAM

Q I'm a recent high school graduate who regrets not having done computer programming at school. What's the best way of going about learning how to program?

George Iannou

A I am not sure if there is a 'best way' to learn programming. Firstly you need to know what language(s) you want to learn. There are lots of theories out there, but nothing beats experience. If you have internet access, then for free you could visit the Microsoft Technet site and learn VBScripting — probably a good introduction. If you can get your head around this then look to TAFE colleges or uni courses. Most of the languages I have used commercially, I have learned on the fly from manuals, short courses and trial and error. Today the internet is a great resource for many of the current popular languages. If you feel you need to do a course, just be wary of ones asking for large sums of money up front — a major training institute was liquidated recently, leaving many students servicing large debts with nothing to show for it. If you stick to the net, good text books, TAFEs and unis or pay as you go you should be fine. Just get in there and have a go: it's very satisfying to see the end result of your labours!



BY ANDREW MARSHALL

Andrew started programming in 1985 at Cadbury Schweppes. He is now on a help desk for another large company.

A Learning computer programming can be a simple process if you keep practising. At school, a computing subject would have barely touched upon programming, and you can always start now. Once you understand the fundamentals, pick a language and get right into it. For beginners, Visual Basic is a great way to start, and the 'Express' version is freely available for download at <http://tinyurl.com/95xyk>. Take a look at the samples and work through the learning section, especially <http://tinyurl.com/ypmmos>. Once you get the hang of it, learn C, as C skills will be invaluable later on. I find that the book *C For Dummies* (by Dan Gookin) is excellent, and should be available at your local library. Once you get past the basics of VB and C, take a look at all the languages out there and learn whichever you like the best — you'll be able to learn from online tutorials at this point. For job prospects, of course, keep in mind that proficiency with Java or any .NET language will serve you best.



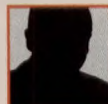
BY AKASH MEHTA

Akash is a full-time student and web developer specialising in Web 2.0. <http://bitmeta.org/>

A The best way to start learning how to program is to choose the programming language that you would like to learn first. The two main programming languages that are used are Visual Basic and C/C++, although you can always choose other ones such as C# and Java. The next step would be to acquire the tools necessary to create these programs.

WHAT'S WITH THE READER BOX?

APC will give readers whose answer is highlighted a small promotion box in which they can promote their business with a mission statement or slogan, and a URL or phone number.



YOUR NAME HERE

A brief detail about how awesome you are that you could help. www.yourwebsite.com



Dvorak keyboard: picking apart a regular keyboard is perhaps the best way to get your hands on a Dvorak. It's surprisingly easy.

There are some free IDEs available, such as Visual Basic 2005 Express Edition and Visual C++ 2005 Express Edition. These programs are used to code and then compile your programming code.

To learn your chosen programming languages, there are a number of online tutorials and various programming books to assist you.

Online tutorials are available at a number of web sites on the internet, including: Microsoft's MSDN network (<http://msdn2.microsoft.com/>); C++ Language Tutorial (www.cplusplus.com/doc/tutorial/); C/C++ Reference (www.cppreference.com/); CodeProject (www.codeproject.com/).

Useful programming books that are available at bookshops include: *Microsoft Visual Basic 2005 Step-by-Step*; *Microsoft Visual Basic 2005 Express Edition Programming for the Absolute Beginner*; *C++ Cookbook*; *Sams Teach Yourself Visual C++ 6 in 21 Days*; and *Practical Visual C++ 6*.

These are only examples of the wide variety of different tutorials and books that you can read to help you learn the programming language you have chosen.



BY CHARLES WONG

Charles is currently learning to design and develop in Flash and Actionscript. www.n2fire.com/

HARDWARE

EXTERNAL POWERED IDE CD-ROM

Q I wish to know how to make an IDE CD-ROM have an external power source and switch? The IDE cable must be able to be accessed from outside.

Shannon So

A There are a few solutions. Firstly, you can simply pass the IDE cable back through an open back plane slot and hook up the drive

externally. You would need an external drive case that has its own power supply. This is not very neat and does require an entire IDE channel free of other devices.

Next you can make things a little neater by getting a back plane plate that has a plug and socket that allows one part to be connected to the IDE connector on the motherboard and the other allowing an external IDE drive case to connect to the outside. A little neater than the first solution.

Next you can get a secondary IDE expansion card with an external connector port. This is still neater, but does need to be configured correctly. The last is probably the easiest and simplest solution. For less than the cost of an internal IDE CD-ROM (get a DVD-RW drive), you can get a 5.25in external USB 2.0 (or FireWire) drive case. This has its own power supply and the IDE CD-ROM drive simply mounts into the case like it would have for an internal unit. It has its own power supply and comes with a USB cable that simply connects to a USB port. If you don't have a spare USB port you can get a USB hub and connect the external drive to it. The only limitation is the availability of a USB port, and an operating system that supports USB. If you are running Windows XP, this is not an issue with no drivers needed.

Ian A. White

HARDWARE

DVORAK KEYBOARD

Q I work from home and am a reasonably good typist. I have heard that Dvorak keyboards are substantially easier to use than the normal QWERTY keyboards. However, I've looked at various keyboard manufacturers' web sites and can't seem to find the keyboards anywhere. Also, I don't want to pay through the nose. What is the easiest solution to this?

Sandra Hopton

TIP: HARDWARE

BOOT FROM A USB STICK — SOME SIMPLE DOS COMMANDS ARE ALL YOU NEED

When Windows won't boot and the CD drive is broken, you could be forgiven for thinking your laptop is on its last legs. And all too often, there will be data on the computer's hard disk that needs retrieving. The problem is that most new computers don't have internal floppy drives to boot from, and without a USB floppy drive your only option is a USB memory stick. To do this, you must write the boot sector to the flash memory. You can't do this from the command line or by using the Windows format with 'Make Bootable' option in the GUI because Windows won't allow you to make anything other than a floppy drive bootable. So it's necessary to copy the boot sector to the USB drive manually. This is normally pretty time-consuming. Luckily there's a very useful utility that allows you to do this.

Download 'mbkt20.zip' from www.nu2.nu/mbkt and then extract to a folder.

Format a floppy disk, making sure you check the option to create a system disk. Now use MBKT to create a copy of the boot sector. At a command prompt type: 'mbkt -c a: bootdos.bin'.

Now, copy the boot sector back to the USB drive: 'mbkt -x bootdos.bin b:' (where b: is the letter assigned to your USB stick). With the boot sector copied back to the floppy disk, it's time to copy the other files (including the hidden and system files) from the floppy disk to the USB stick. Once all files are copied, you can boot from the USB stick as if it were a floppy disk.



Gather the right set of files and you should be back up and running quickly.



TIP: WINDOWS

WHAT HAPPENS WHEN AN OS INSTALLS ITSELF?

The target HDD is empty and the installation files are contained in cabinet files on the distribution CD or DVD. So where are the files unpacked to? The answer is that, during the installation routine, a pre-installation environment, drive X, is created in RAM. Then, the contents of a source file called 'boot.wim' are unpacked to the temporary drive and used to start the Vista installation program, now running from drive X. Command line access to the utilities on drive X is provided by pressing Shift together with F10 after the Vista product key has been entered during the installation routine.

Troubleshooting utilities can even be run from DVD if the Vista DVD is temporarily removed, and access to USB devices is available using the media driver contained in 'boot.wim'.

Interestingly, this feature is enabled much earlier in the setup process than with previous versions of Windows. Access to the command prompt is available before the setup copies any files to the hard disk. Therefore, if you suspect that a Vista installation may be failing because of a physical problem with the disk, you can pause the installation and run disk examination tools before the file copying part of the installation procedure.

HAVING TROUBLE DUAL-BOOTING XP AND VISTA

Q I recently bought a new Vista PC and had some trouble running my old software. I wanted to dual-boot XP and Vista so I installed XP, but now Vista won't boot at all... only XP boots. Why won't Vista boot as well?

Benito Dolan

A Vista won't boot in your configuration because the installation of XP over Vista removed the Vista boot process, which differs to the XP boot process in that Vista now controls the boot process for the active partition. In Windows XP, the boot process starts with BIOS. The BIOS on the computer main board finds the boot device and the first physical sector called the Master Boot Record (MBR) containing the code required to boot the computer and other information such as the partition table. Then the boot code contained in the first physical sector queries the partition table and passes control of the process to the boot sector in the active partition. The active partition boot sector then loads ntldr.exe which in turn queries boot.ini, which contains information on which OSs are installed and, if necessary, presents a menu. Like XP, Vista also needs BIOS to find the boot device and MBR. Boot sector code in the active partition and load a new Vista-only boot manager called bootmgr.exe. The Vista Boot Manager then parses a binary-coded decimal version of boot.ini and, if necessary, presents the user with a boot menu. If an older version of Windows is selected from the menu, the Vista Boot Manager calls ntldr.exe and passes control over to it. The difference is that Vista no longer uses ntldr.exe and a text-based boot.ini as these have been replaced with bootmgr.exe and a binary boot.ini file. During installation of Windows XP, the MBR, the boot sector and the boot files are overwritten and your PC simply forgets that Vista is installed.

A You'll probably find the best route to Dvorak heaven is to make your own keyboard. This isn't as bad as it might at first sound and can be done in around 30 minutes. First, choose your keyboard — this will have to be a QWERTY because Dvorak keyboards are a bit thin on the ground. However, many keyboard designs on the market won't do: you need to get one that has all of the keys at the same height and angle. Reject those that have the top-letter-row keys higher and/or at a steeper angle. Also, the keys on all three letter rows need to be the same shape and size, because you're going to swap them over. The most likely candidates are cheap, flat keyboards which you can pick up for less than \$30. You can prise the keys off from the front, but it's better to carefully take the keyboard apart (remembering where each screw goes) and unlatch the keys one at a time, swapping them so that they end up in the order in the photograph (page 85). Only the 'A', 'M', 'V', back-tick and the numbers don't move. Screw it back together and you have a Dvorak keyboard.

WINDOWS

INDEX YOUR PDFs

Q One thing I like about Windows' Search is that it can index Word documents and search within them for a term. Can I set up Search to do the same thing for PDFs?

Simon Martins

A Adobe has a tool for that very purpose. The IFilter is designed to link Adobe Reader with Windows Search (<http://snipurl.com/1omua>). You may notice that the list of supported operating systems does not yet include Vista. While 32-bit Vista may not be too problematic, 64-bit Vista will definitely not work with this library until Adobe updates it. As an interim, try a third-party IFilter instead, such as the Foxit PDF IFilter (www.foxitsoftware.com).

While it's free to use at home, you are required to buy a hefty licence for use in a server environment. The good news is that it comes in either a 32-bit or 64-bit package.

TIP: NETWORKING

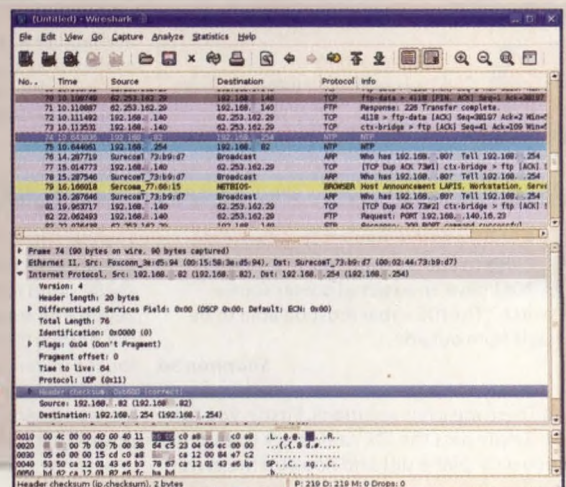
WIRESHARK PACKET SNIFFER — EVER WONDERED WHAT'S GOING ON WITH YOUR SUBNET? HERE'S HOW TO GET A BETTER INSIGHT...

Packet sniffers are particularly useful if you want to find out what's going on on your network. Has somebody opened an email attachment and is now sending out millions of spam emails? Is somebody using an instant messenger? A good quality packet sniffer will pick up on these. The sniffer that's currently packaged with SUSE 10.2 is Wireshark. This was formerly known as Ethereal and the interface is familiar to anybody who knows Ethereal. It will run on many OSs including Linux, Solaris, the BSDs (and Mac OS X), Unix-like OSs and Windows.

If you're worried about security — capturing packets in promiscuous mode requires root

privileges — you can use tcpdump or dumptcap to save the packets to a file and then analyse them later using Wireshark. If you haven't got Wireshark with your OS, you can download it from <http://wireshark.org/download.html>.

Find out what's really going on on your subnet with Wireshark.



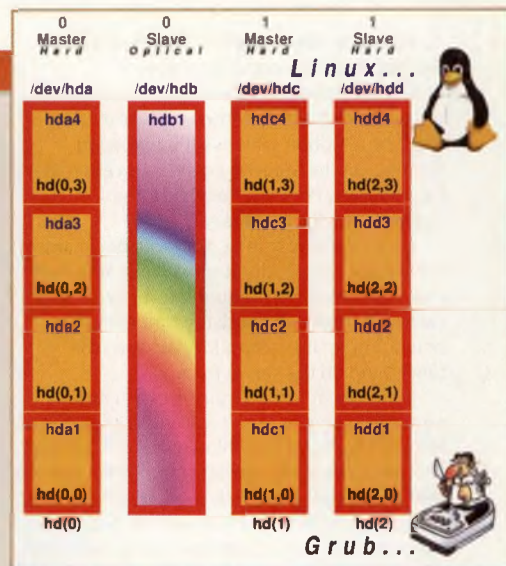
TIP: LINUX

UNDERSTANDING GRUB PARTITIONS

When you install Linux (or Solaris, FreeBSD and so on), you get the opportunity to install Grub (the GRand Unified Bootloader) wherever you want. This includes the disc's master boot record in addition to each partition's. For the first hard drive (normally the master on channel 0), the master boot record is hd(0) and for the second, it is hd(1). For a machine that has been bought with one hard drive, normally, your optical drive would be the master on channel 1. However, if you want to have a smallish drive for your OS and enormous DVD-editing storage, you might have three HDDs — any CD/DVD writing you do will be from a drive on channel 1 (as in the configuration in the diagram) to the optical drive in the slave on channel 0. This would make for expandable storage without overloading your channels. With Grub, the optical drive is ignored so, in this instance, hd(1) is the master on channel 1 which, under Linux, is hdc.

One other point to note is that the first partition on a given drive is '0', the second is '1' and so on. To install Grub on the first partition of the first hard drive, the location is 'hd(0,0)' (the first number is the hard drive number and the second is the partition).

If you install SUSE (or a number of others) and you let it, it will install Grub for you at the beginning of the first partition of the first hard drive ('hd(0,0)') and you won't need to know anything about this. However, if you want to install an OS to boot from '/dev/hdc2' as specified in the OS's install procedure, using the physical configuration in the diagram, you need to be aware that in the Grub specification, you need to specify 'hd(1,1)' because if you specify 'hd(2,2)' it will install Grub in '/dev/hdd3'. And while this will work if you have such a partition — you will be able to chainload into it — you will end up very confused, as Peter Lurcott did (page 88), when you try to unify your bootloaders into one menu.lst file.



Forget the /dev/hd2c structure and think 'Grub partitions' instead.

To recover your Vista installation you'll need to use the recovery CD that originally came with your PC.

Eds note: go to www.apcmag.com for our incredibly comprehensive, screen-by-screen SuperGuide on how to dual-boot Vista with other OSs such as XP and Ubuntu.

WINDOWS

STRANGE CLICKING NOISE

Q Vista does an odd thing: whenever I click on a new location in Windows Explorer, there is an awful clicking noise that sounds like the arm in the hard drive clobbering some sort of stop inside the drive itself. What's going on here? Is Vista slowly destroying my hardware?

Michael Branto

A While Vista's index-building process certainly does hammer your disk drive, which amounts to slowly destroying your hardware, the source of the noise is actually quite innocent. Click on Start > Control Panel > Classic View and then double-click on 'Sound' (alternatively, you can get to it via 'Appearance and Personalization'). In the Sound dialog box, click on the 'Sounds' tab and then, in the Program list box, scroll down to Windows Explorer > Start Navigation and click on it. In the Sounds drop-down combo, 'Windows Navigation Start.wav' (with spaces in the file name) should appear. If you now click on the 'Test' button, you should be able to hear the noise that sounds like your hard drive being destroyed. Why they

Outlook form errors can be solved by clearing the cache in the Forms Manager.

chose this sound or how they recorded it, we don't know, but you can switch it off by selecting '(None)' as the sound and clicking on the 'OK' button.

OFFICE

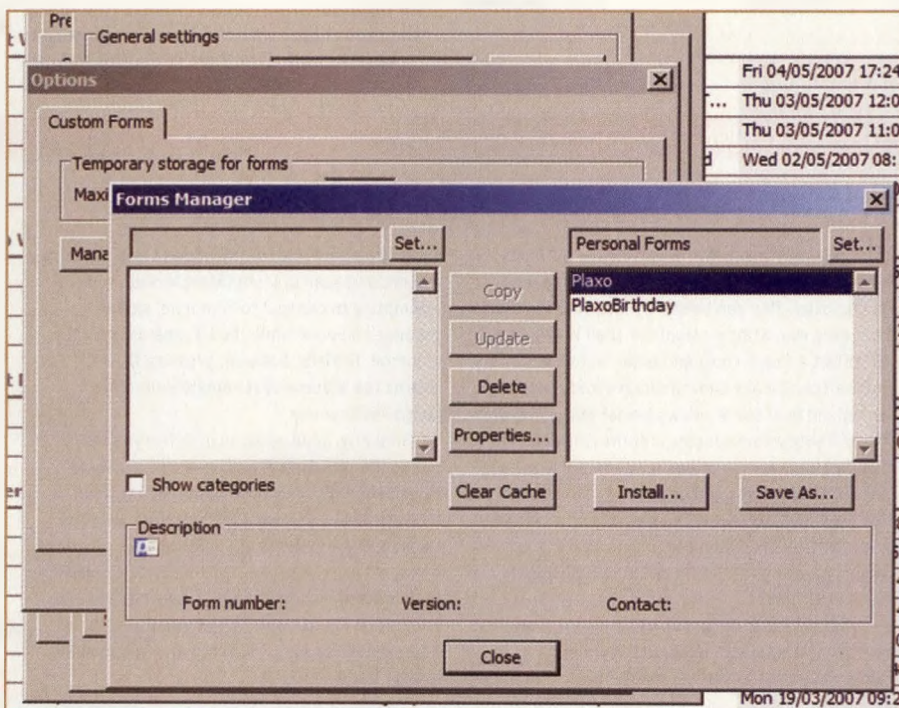
OUTLOOK FORM ERRORS

Q Whenever I try to start a new email in Outlook I see the following message: 'Error Message: The form you have selected

cannot be displayed. Please contact your administrator.' Why is this?

Peters Willy

A New mail, calendar, contacts and so on are all forms stored locally in a cache. Outlook maintains a cache of forms because opening a form from a cache is quicker than opening from a network share such as an Exchange server or alternatively a workgroup server.





Forms can be published in many places if Outlook is configured in a corporate environment. For this reason, after searching the cache and before retrieving a fresh copy of the form, Outlook searches the following locations in the following order: Current folder's forms library; Personal Forms library; Organization Forms library.

If the required form is not available in any of these locations, Outlook will download a fresh copy. If a copy of the required form exists in the cache, Outlook will check the timestamp belonging to the cached form against the timestamp on the server form.

If the server form is more recent, Outlook opens the server-based copy and copies the form to the cache for offline use. If the cached version of the form postdates the server version, then the cached version is used. Version and timestamp information is then updated in the frmcache.dat file (C:\Windows\Local Settings\Application Data\Microsoft\Forms).

Outlook can produce this error if a form is edited and saved with another name. In this case the cache information must be cleared. From within Outlook, go to Tools > Options > Other > Advanced > Manage Forms > Custom Forms > Manage Forms > Clear Cache. If you have an older version of Outlook you may simply delete 'frmcache.dat' and restart the program.

LINUX

THE CRONTAB FILE

Q I keep seeing references to the Crontab file but I have no idea what it is or what it does. I am a fairly new convert to non-Microsoft operating systems so this may be a simple question.

David Balencia

A The crontab file ('/etc/crontab') contains a list of programs and when the system should run them. Each minute, the system reads /etc/crontab and looks for any times that match the current time. Any that it finds, it runs. In the file, each job has a line to itself. On that line, you will find a series of numbers or asterisks followed by a userID and then the program with any arguments. The numbers and asterisks tell it when to run and they are ordered as follows: Minute (0..59); Hour (0..23); Day of month (1..31); Month (1..12 or names); and, Day of week (0..7 or name) with 0 or 7 being Sunday. If you want a program to run on weekdays, every other hour from 7am to 5pm, you can use '0 7-17/2 * * * 1-6' so it is quite flexible. Each user can have their own crontabs, which they can edit themselves with the crontab command.

LINUX

ALL-POWERFUL GRUB

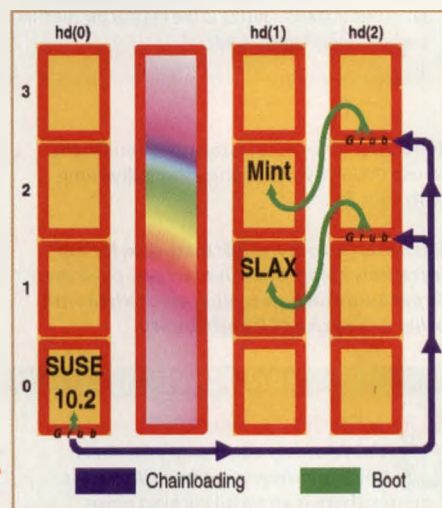
Q My computer has three hard drives, and I installed three different versions of Linux on different partitions to try them out. Each has a Grub boot loader installed and I can chain to them from the first using 'menu.lst'. One is on the first drive (hda) and the others on the third (hdc). My optical drive is hdb. I can't get the first Grub to chainload every system and my partitions don't make sense. What's gone wrong and how do I fix it?

Peter Lurcott

A Grub needs to be able to boot any operating system, whether it is Linux, Solaris, BSD or Windows. Each has its own way of looking at hard drive space. Linux uses hda for the first drive with hda1 being the first

All-powerful Grub: It knows what it's doing but, when you choose where to install it, you need to know as well. Here, 'hdb' is invisible to Grub.

partition, hda2 being the second and so on; Solaris uses slices with names like 'c0d0s7' (channel 0, disc 0 (master), slice 7); OpenBSD uses a sliced partition with names like 'wd0a' (disc 0, partition 'a'); and, Windows names each partition, regardless of drive, from 'C:' upwards. Grub has to make sense of all of these. Booting into the versions of Linux you normally chainload to, as root, look in each /boot/grub for 'menu.lst'. Copy it to a flash drive or floppy and rename the copied file so you know which is which. Then, in the Linux version you use by default, as root, open its '/boot/grub/menu.lst' and open it in a text editor. Open the other files off the flash drive or floppy and then copy the OS sections (starting with a line beginning with 'title') to the '/boot/grub/menu.lst' file. Note that you can edit the name in the title so you can tell which is which. Next, save the file and try booting into each one. Finally, you can delete those that you don't need.



TIP: NETWORKING

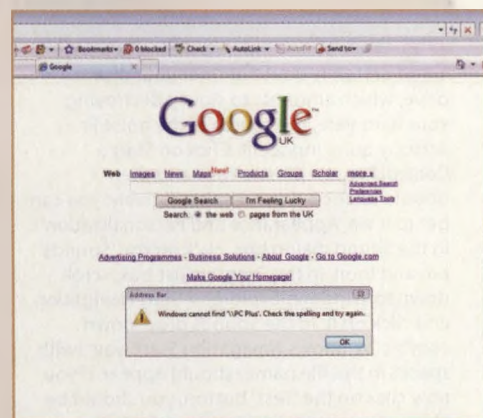
NETWORK TIMEOUTS UNDER VISTA — HOW WINDOWS VISTA DEALS WITH BROKEN NETWORK CONNECTIONS

Windows Server and Windows XP have difficulty handling connections to network shares that no longer exist. This can be simply illustrated in the following way. Start a command shell in Windows XP (Start > Run > cmd) and enter 'net view \noone' (can be any unavailable resource) at the command line. The Windows kernel will pause while the I/O subsystem searches for the resource and Windows will appear to pause. Depending on your network, this pause can be lengthy, especially if you have numerous servers. The inability of Windows to overcome this common problem is also evident when searching for files in popular applications such as Office.

Attempting to open a document on a share that is no longer available will cause Word or Excel to hang while the I/O subsystem attempts to find the

share. Compare this with Windows Vista. Opening a command shell in Vista (Start > cmd) and attempting to connect to '\\noone' again produces a pause while the I/O searches for the resource. In Vista, however, pressing Ctrl+C causes the process to terminate and return control to Explorer.

Similarly, in all versions of Office you may notice that the Cancel button is now available when searching for a document residing on a network share. System administrators, who are familiar with hundreds of helpdesk calls produced by users vainly searching for shares on a server that crashed last night (and is causing Office to hang while XP attempts to synchronise with the non-existent server), will sleep more peacefully in their beds.



Vista's I/O system is able to handle non-synchronous network calls.

TIP: SECURITY

WEP OR WPA ENCRYPTION — WHICH SHOULD YOU BE USING FOR YOUR WIRELESS LAN?

WEP and WPA are methods of encrypting data that flows across wireless networks. Data flowing across any network is very simply captured and decoded. Even worse, data flowing between two wireless devices doesn't actually jump from one to the other — every other wireless device within range of yours will also receive the data and it's up to the owner of the wireless device to choose whether to look at it or not.

Clearly, anyone transmitting data over a wireless network and not using encryption is either insane or living on the moon. It's up to the people administering the network to agree on what kind of encryption they should use.

WEP (Wired Equivalent Privacy) is the earliest and simplest of the two choices. Developed in 1999 as part of the 802.11 standard, it offers security

Authentication Method:	Shared Key
WPA Encryption:	TKIP
WPA Pre-Shared Key:	*****
WEP Encryption:	WEP-64bits
Passphrase:	*****
WEP Key 1 (10 or 26 hex digits):	*****
WEP Key 2 (10 or 26 hex digits):	*****
WEP Key 3 (10 or 26 hex digits):	*****
WEP Key 4 (10 or 26 hex digits):	*****
Key Index:	1
Network Key Rotation Interval:	*****

WEP or WPA encryption are ways of securing data that's moving over a wireless network.

comparable to that of a wired network, although it proved easy to hack using widely available tools. A number of highly publicised experiments proved that WEP-encrypted data could be decoded in a matter of minutes, and it quickly fell out of use in favour of WPA (Wi-Fi Protected Access), a much

harder form of encryption that's become the standard for network administrators. When choosing your WPA passwords, remember that your password should be between eight and 63 characters. WEP passwords must be either five or 13 characters.

LINUX

RETAINING PERMISSIONS

Q I'm told you can get a floppy disk to remember Unix permissions, yet FAT doesn't carry any such information. Is there a file with the data stored in it? How can it do it?

Michael Galt

A To save such information on a FAT-formatted disk, you'd need to use a file of some sort to save the information — there would be no way of protecting it. However, FAT is not the only file system you can use on a floppy disk. In the screenshot overleaf, you can see a floppy that has been formatted with Minix — OpenSUSE's YaST allows you to format floppies in Ext2, FAT and Minix. You can see that, instead of inheriting the permissions of the user that mounted the disk (or are described in `/etc/fstab`) as would have happened with FAT, when Minix or Ext2 is used, permissions are preserved.

Just in case any readers thought that the floppy disk was dead, it's still found on current servers and some PCs. You can run a printer server off just a floppy (no HDD) and they are often used to store configuration files on FDD/CD disc-less machines used as firewalls. When you can't get a USB flash drive to work, you can always rely on a floppy, so while you might not use one all of the time, when you need to, you'll be grateful that you decided to have one installed.

NETWORKING

WI-FI CONNECTIVITY

Q At random times, I lose connectivity from my Wi-Fi network, transfer speeds slow to a crawl and nothing works until I manually disable and re-enable the wireless adapter. My router's downstairs and it happens all over the house, but mainly when I'm upstairs. My wife won't let me use cables, so I'm stuck.

Richard Leighton

A It sounds like you're getting a lousy signal from your router. There are two options: a high-gain antenna to pick up a better signal, or a wireless bridge. A better antenna may be all you need. You can pick one up for about \$30, and all you need do is disconnect the bundled antennae and put the better-quality one in its place. A Wi-Fi bridge is a more pricey solution, but will extend the range of your network. They produce mixed results, though. Some devices are incompatible with others, setup is complicated and the bridge can cost more than the router.

INTERNET

ONE WEB PAGE WITH MULTIPLE ADDRESSES

Q I've had my web site for nearly two years and am happy to say I'm now getting a few thousand visitors a month. But there's one thing that annoys me and

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TIP: PHOTOGRAPHY

RAW IMAGE FORMAT — WITH 16 BITS PER PIXEL PER COLOUR, RAW GIVES YOU MORE SCOPE THAN JPEGs.

Your camera's image is captured by the cells on the CCD sensor. This works because of something called the photoelectric effect, where electrons are displaced by individual photons. So, in effect, the output of each cell is a crude count of electrons and has a very large dynamic range, although this is reduced by thermal noise. Normally, this is reduced down to eight bits so that the image can be saved as a JPEG file, but if your camera can save RAW files, you can keep a lot of this dynamic range. The result of this is that if you were interested in a range of detail that only existed in the darkest one per cent of the image density, a JPEG image (being eight-bit) would give you two or three values to choose from, whereas you might well find that you could extract a whole eight bits' worth of data from that range using RAW. Another advantage of cutting

down the dynamic range to eight-bit is that you're able to perform corrections to colour temperature, linearity, gamma, saturation and so on. At the end of this, you still have an eight-bit per pixel per colour image and you haven't introduced any JPEG artefacts. As if that wasn't enough, you can also choose from the interpolation method — the way that the missing colours from the Bayer Mask are guessed at.

So, while RAW files are normally at least twice the size of a corresponding JPEG, the amount of extra data you have to play around with makes it all worthwhile, as you can make your photos look how you wanted them to.



Don't leave it to some programmer at a camera manufacturer to modify your image with pre-processed JPEGs; choose for yourself what goes in the final image.

I haven't yet found a way around it. My visitors are split between <http://www.mysite.com.au> (as an example of the site's actual address) and <http://mysite.com.au>. Obviously, leaving out the 'www.' means there's less typing for people coming directly to my site and I prefer that form of URL, but some sites that link to me do so with the 'www.' and some without. My logs are therefore split and — I believe — so is my Google PageRank. Is there any way I can ensure that all my visitors just go to <http://mysite.com.au>?

Eileen Blythe

There are a couple of solutions that spring to mind but this following one is probably the easiest to implement. Assuming that you have Mod Rewrite enabled on your web server, you just need to add three lines to the .htaccess file in your root folder (the one with your main index.html file in), like this:

RewriteEngine on

```
rewritecond %{http_host} ^www\mysite\co.uk [nc]
```

```
rewriterule ^(.*)$ http://mysite.co.uk/$1 [r=301,nc]
```

If you don't have an .htaccess file then create one with the above lines in it. What these commands do is tell all web browser clients that come to your site with a 'www.' in the path that the page has permanently moved to a new address (by issuing a 301 header message). So, for example, all inbound links to 'http://www.mysite.com.au/blog/' will be redirected to 'http://mysite.com.au/blog/'. And that's all you have to do, which you have to

Permissions: use the right file system format and even a floppy remembers what belongs to whom.

admit is much easier than alternative methods of using PHP or Javascript.

INTERNET

OPEN PORTS UNDER WINDOWS XP

I'm running a development server to test a Joomla web site that I'm working on. The server is a normal PC running Microsoft Windows XP. On top of XP I installed the Xampp Apache server software, which appears to be running fine but I just can't connect to it. How can I test which ports are open on the server?

Stacey Weaver

Testing server ports is an everyday task for system admins and there are plenty of port-scanning tools available. One of the most underrated is the portqry.exe command line tool shipped with Vista, XP and Server 2003. The trouble with command line tools is they can be a bit unfriendly, but there's a neat GUI for portqry.exe available as a free download on Microsoft's site. PortQry has a number of predefined queries including domains and trusts, networking and the ability to search for SQL servers on your network. Check the availability of your web server by entering the web server IP or machine name (a working DNS



server isn't necessary as name resolution is handled by NETBIOS over TCP) and let PortQry test for a listening server on that port. Results are displayed in the GUI and can be copied to the clipboard.

INTERNET

SWITCH FIREFOX PROFILES

Q I share my computer with other members of the family. We don't always log off so we just use the current session. Trouble is that Firefox auto completes forms with the wrong information. How can I tell Firefox just to show information and details for me?

Eddie Miller

A You need the Profile Manager, a common enough sight with earlier versions of Mozilla but one that needs coaxing into the light in Firefox. For some reason Mozilla considers profiles to be the kind of thing that only developers should use and so it's hidden away the ability to create and choose profiles. Firefox saves auto complete entries and browsing histories in a profiles folder hidden deep below your user data. The profile folder is hidden, so the best way to go straight there is to simply type '%appdata%' at the Start menu (or Run in XP).

From the Application Data folder navigate to Mozilla\Firefox\Profiles, which contains your browsing history, your bookmarks, saved passwords and auto complete preferences, and is a useful folder to back up from time to time if you're the kind of person that lives on the web. Configuring Firefox to create and use separate profiles is easy enough, but it needs to be started manually like this: Close Firefox completely by using File and Exit from the menubar. At the Start menu (or from the Run menu in XP) type "C:\Program Files\Mozilla Firefox\firefox.exe" — profilemanager.

A dialog will appear with options for creating a new profile. Create your personal profile and accept the default options for the profile folder or select an alternative. Finally, select the option to have Firefox prompt you for profile information when starting. That's it. Start Firefox normally and choose your new profile.

SECURITY

APPLE VIRUSES

Q I went into an Apple shop, and in the sales pitch the shop assistant claimed that there had been no OS X viruses at all. Surely there must be some? I seem to remember there being something about an iPod virus recently.

Gary Tillette

A There are Macintosh vulnerabilities and there has been at least one virus for OS X. Despite claims it's 'only' a trojan, it is actually a



Apple viruses: just when you thought your iPod was safe — virus attack!

virus. To be clear, trojans aren't capable of self-replication and the OS X virus we know of does self-replicate. While there are things the user has to do for it to run, this has always been the case, right from the first boot-sector virus. As for the iPod virus, at InfoSecurity 2007, Eugene Kaspersky mentioned that he was passed it by the ex-girlfriend of the original iPod virus writer. With this virus, which is just a proof-of-concept, there are too many unlikely things that the iPod owner has to do in order to make it work for it to be a threat. However, as we all saw with the Microsoft Word Concept virus in 1995 (which, rather ironically, was shipped by Microsoft), it wasn't long before the proof-of-concept code was extended and became a real threat. Whether this will ever happen with the iPod virus is another thing, but the claim that OS X is invulnerable to viruses is now laid to rest.

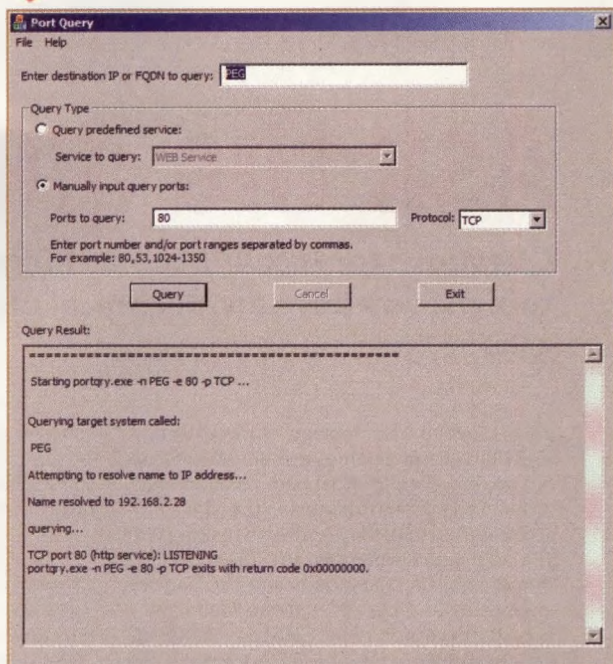
MULTIMEDIA

LONG FAT FILENAMES

Q My MP3 player has started playing tricks on me. I recently ripped an album to MP3 files on my brother's new system and then copied them to my MP3 player. Although all of my other MP3 tracks play in order, these don't. It isn't random — they always play in the same order, just out of sequence.

Jonathan Pinson

Open ports under Windows XP: the simple portqry.exe that ships with Windows is a powerful tool for network administrators.



A This is a classic 8.3 DOS name problem. The file system in MP3 players is almost always a FAT file system of some sort. FAT stores names in the 8.3 format and then there's an extra file system reference for the human interface.

The program that ripped your original MP3 files most likely used a file name format that went along the lines of 'track-number_song-title.mp3' producing, for example, '03_just-what-i-needed.mp3' and '04_drive.mp3'. Your new ripper (on your brother's new system) probably saves the artist first. Your new files might look like 'david-bowie_01_future-legends.mp3' and 'david-bowie_02_diamond-dogs.mp3'.

In the first case, the 8.3 names will be '03_jus~1.mp3' and '04_dri~1.mp3' and will play in order. However, in the second case, they all start with 'david-bo' so it depends upon the order they were transferred to your MP3 player. It may be that Diamond Dogs was copied first, followed by Future Legend. The MP3 player just sees them as 'david~01.mp3' and 'david~02.mp3' and plays them in that order, regardless of the fact that Future Legends comes first in the long file names. For new tracks, the solution is to configure the ripping program to put the track number first. For those you already have, just rename the files, putting the track name first.



Edit

Help



Ask the questions

Questions for Ask APC are coming in. Vista is a popular topic. If you have any technical questions, send them to: askapc@acpmagazines.com.au.

Q I have noticed problems with both Vista Business and Home Premium when set up on two computers in a dual-boot situation with XP Pro. There seems to be some issue with accessing files from the XP drive when using Vista. The latest problem occurred after downloading a three-licence CA Security pack and installing one instance on the C drive (XP Pro installation). I booted into Vista and wanted to copy the 40MB file into a folder on the C drive (XP drive) and then copy that folder to the Vista drive (D). When I tried to do this, Vista wanted admin permissions and started some sort of transfer window at 46Kbit/s. Not very promising when the file in question is a 40MB executable. Prior to that it said it couldn't access the C drive (I've had similar problems copying TV programs recorded in XP and Vista via the home network.)

Allan McWaters

Q I want to replace my ageing XP computer with a newer custom-built unit to run Vista Ultimate. Like I did five years ago, I want to put it together myself, but I'm at a loss as to the difference between 32- and 64-bit Vista Ultimate versions. What are the differences and does other

software have to be compatible? I've noticed 64-bit versions of Office 2007 online, but no other software seems to mention it. Is it even worth going for 64-bit software/hardware now?

Rick Karlsson

Q My installation of Vista Home Premium has about 292MB of fonts in the windows/fonts directory, is this a joke? One of the fonts is dated 1995 — did I pay Microsoft heaps of money so they threw in 292MB of these things? It must be a joke. Please advise, maybe you can tell us all which fonts we can delete?

Graham Rogers

Q I have been using a Samsung Syncmaster 910N monitor with a Radeon 9600 video card on W2K Pro for a while without any trouble. I recently purchased a Syncmaster 305T monitor but cannot get it to work. I have followed the setup instructions that came with the new monitor and, when I switch on, it shows all the correct boot-up images until it reaches 'Windows 2000 Professional. Starting Up'. After that, the screen goes blank. The boot-up continues to completion, however, as I can tell from the sounds

on the separate speaker system, but the screen remains blank and useless. This is supposed to be a plug-and-play monitor. Do I need to get a new video card? What is wrong? Can you help?

Alastair Munro

Q My daughter has SuSe Linux 10 on her computer as she has an interest in a few of the games. However, some games will not work, as they require an updated video driver. APC provides Nvidia drivers on the cover disc, but can anyone tell me how to install them, as I am not experienced with Linux?

Bruce Pierson

Q I have an issue that's bugged me since Windows 98 first offered a Thumbnail view in Windows Explorer. Explorer Thumbnails, while able to preview a directory full of common image file formats (even large .bmp files), can't display a font file preview i.e. a .ttf file. I have not been able to find a shell extension that adds this capability, at least to installed fonts if not separate font library directories. Does anyone know of a suitable shell extension?

Lesley Pantlin

Answer the questions

If you feel you can answer one of the questions above, please send your answer to: askapc@acpmagazines.com.au.

You'll be able to score free promotion for your business or web site if your answer to one



BY LACHLAN GRANT

For help with all your IT and online support, contact Gary, not me. www.callgary.com.au

of the questions above is published in APC Magazine's 'Ask APC'.

APC will give any readers whose answer is published a small promotion box (see left) in which they can promote their business — with a mission statement or slogan, and a URL or phone number.

In relation to the size of submissions, try to make the answer no longer than 200 words (but less is better for us). If none of our readers are able to offer an answer to a particular question that we receive, we will turn to our list of industry experts to provide a solution for your queries.



Optus launches "fusion"

— BIGPOND \$29.95 KILLER

Got friends or family on the \$29.95 BigPond plan? Tell them to check out Optus' new Fusion plans. *Dan Warne reports.*

The new Optus Fusion plans might not be for power users, with their maximum usage allowance of 20GB and controversial two-way usage metering (uploads counted as well as downloads), but they're orders of magnitude better value than BigPond's entry-level offerings.

Take, for example, the entry-level Fusion \$69 plan — you get line rental (which most people are paying \$25-\$30 a month for), unlimited phone calls to landlines nationwide and Optus GSM/3G

mobiles (let's say that's worth \$20-\$30 a month for most people who use their landline lightly) and 20Mbit/s ADSL2+ or cable broadband, with a usage limit of 2GB (worth about \$40 a month with major ISPs).

So, on average, most people will get \$85-\$100 worth of value for \$69 — and that's for light phone users. Families or small businesses who make many more phone calls can make big savings with Optus Fusion without having to worry about the intricacies of setting up VoIP.

The main catch is that it's a two-year contract, only available in areas that are served by 'Optus Direct' equipment in Telstra exchanges or via the HFC cable network.

That counts out most regional and rural users, and even many streets and suburbs in city areas. At the end of March, Optus had 270 exchanges covered with ADSL2+ and says it is on track to have 366 enabled by next March — one of the largest ADSL2+ networks, but still far from blanket coverage.

		UPFRONT COST	DATA	SPEED	SPEED ONCE OVER LIMIT
\$69	Unlimited local, national and calls to Optus GSM mobiles.	Two-year contract, \$0 install, free modem.	2GB	ADSL2+ (up to 24Mbit/s)	64Kbit/s
\$89	Unlimited local, national and calls to Optus GSM mobiles.	Two-year contract, \$0 install, free modem.	7GB	ADSL2+ (up to 24Mbit/s)	64Kbit/s
\$99	Unlimited local, national and calls to Optus GSM mobiles.	Two-year contract, \$0 install, free Wi-Fi modem.	20GB	ADSL2+ (up to 24Mbit/s)	128Kbit/s

your monthly broadband guide

APC is proud to partner with the independent broadband price-monitoring service Broadband Choice (broadbandchoice.com.au) to bring you the best ADSL and cable deals.

The comparison table on the following pages focuses on internet service providers that best serve the majority of APC readers' needs — those that have national coverage (though we have included some ISPs that provide higher than 2Mbit/s speed services in limited areas).

Only those meeting at least three of our four plan selection criteria are listed:

Budget plan: cheapest deal under \$35/month.

Light plan: cheapest deal under \$60/month, with at least 512Kbit/s speed and 1GB data.

Family plan: largest download allowance under \$80/month, at least 512Kbit/s and 10GB data.

High-speed: cheapest 1.5Mbit/s plan under \$100/month, with 10GB data minimum.

If an ISP has "unlimited downloads" but speed is throttled after reaching a certain limit, the portion in which you can get full-speed downloads is listed as its limit.

APC has picked the lowest price for a contract period of six months or less for broadband installation. Otherwise, the lowest-priced option was selected.

The installation price doesn't include a modem because you may find you'll get better value by buying one separately.

Can't find your provider in our list? That's because some of the largest ISPs, and many smaller ones, didn't meet the selection criteria. There may be ISPs we didn't list that will provide better deals (but which only service your local area or state).

ISPs enter their own information into the Broadband Choice database. ISPs can contact bc@whirlpool.net.au for more details on how to become part of the database.

Data for our table was extracted from the Broadband Choice database on 17 July 2007.

in brief

NEW WEB SITE SHOWS LOCATIONS OF ALL ADSL2+ COVERAGE

Forget the government's new "BroadbandNow" web site — an anonymous broadband industry insider has put together a much better web site that shows the locations of all ADSL2+ providers and their coverage. Just type in your phone number and see your house plotted on Google Maps, what phone exchange it's on, what ADSL2+ providers are available to you and the estimated speed you'll get given your cable length from the exchange. Check out: adsl2exchanges.com.au.



MORE PRICE RISES FROM TELSTRA?

Telstra wants the right to raise prices on 5.2 million phone lines in exchange areas where competitors have installed their own DSLAMs. Telstra says, in those areas, competition is strong and therefore it shouldn't be subject to regulated prices. "These obligations date from before Telstra's competitors had their own infrastructure," said Telstra's Dr Tony Warren. "Now that our competitors have their own infrastructure in place, this kind of regulation is redundant."



Name	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kb/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kb/s, minimum 1GB data limit)	High-speed plan (under \$100, at least 1.5Mb/s, minimum 1GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Superfast broadband ISPs (faster than 1.5Mb/s)									
Comcen Internet ADSL	www.comcen.com.au	N/A	\$59.95†* 5GB+ 8Mb/s	\$69.95† 20GB 8Mb/s	\$69.95† 20GB 8Mb/s	✓	✓	\$99 6mths	✓
Comcen ADSL2+	www.comcen.com.au	\$29.95†* 1GB+ 24Mb/s	\$29.95†* 1GB+ 24Mb/s	\$69.95† 40GB 24Mb/s	\$59.95† 20GB 24Mb/s	✗	✓	\$50 12mths	✗
Comstech Systems ADSL	www.comstech.com.au	N/A	\$51.50† 5GB 24Mb/s	\$77.50† 50GB 24Mb/s	\$61.95† 10GB 24Mb/s	✓	✓	\$133.95 6mths	✓
Dodo ADSL	www.dodo.com.au	N/A	\$49.99†* 1GB+^ 8Mb/s	\$79.99†* 10GB+^ 8Mb/s	\$79.99†* 10GB+^ 8Mb/s	✓	\$1.90	\$129.99 1mth	✓
Dodo Super Fast ADSL2+	www.dodo.com.au	\$9.99†* 1GB+^ 24Mb/s	\$9.99†* 1GB+^ 24Mb/s	\$79.99† 25GB+^ 24Mb/s	\$39.99†* 10GB+^ 24Mb/s	✗	\$1.90	\$129.99 1mth	✗
Dodo High Speed ADSL2+	www.dodo.com.au	\$29.99†* 1GB+^ 24Mb/s	\$29.99†* 1GB+^ 24Mb/s	\$79.99† 25GB+^ 24Mb/s	\$49.99†* 10GB+^ 24Mb/s	✗	\$1.90	\$129.99 1mth	✗
EFTel ADSL	http://w3.efitel.com	N/A	\$59.95†* 2GB 8Mb/s	\$79.95†* 25GB+ 8Mb/s	\$79.95†* 25GB+ 8Mb/s	✓	✓	\$125 12mths	✓
Empcom ADSL2+	www.empcom.net	N/A	\$59.95 20GB 24Mb/s	\$59.95 20GB 24Mb/s	\$59.95 20GB 24Mb/s	✗	✗	\$129 6mths	✗
Green Tree Frog ADSL 2+ ULL	www.greentreefrog.net.au	\$29.95† 2GB 24Mb/s	\$29.95† 2GB 24Mb/s	\$66† 20GB 24Mb/s	\$66† 20GB 24Mb/s	✗	✓	\$0 12mths	✗
Iinet broadband2+ ADSL (24Mbit)	www.iinet.net.au	\$29.95† 500MB+ 24Mb/s	\$39.95† 2GB+ 24Mb/s	\$69.95† 20GB+ 24Mb/s	\$59.95† 10GB+ 24Mb/s	✗	✓	\$79.95 6mths	✗
ISP ADSL2+	http://w3.isp.net.au	N/A	\$36.30†* 16GB 24Mb/s	\$69.30†* 42GB 24Mb/s	\$36.30†* 16GB 24Mb/s	✗	✓	\$145.65 6mths	✓
Intermode Extreme ADSL2+	www.intermode.on.net	N/A	\$59.95 20GB 24Mb/s	\$74.95 30GB 24Mb/s	\$59.95 20GB 24Mb/s	✗	✓	\$129 6mths	✗
Koala ADSL 2+	www.koalatelecom.com.au	\$34.95† 500MB 24Mb/s	\$44.95† 5GB 24Mb/s	\$74.95† 50GB 24Mb/s	\$49.95† 10GB 24Mb/s	✓	✓	\$149.95 6mths	✗
Letsgo Go ADSL2+ 24Mbit	www.letsgo.com.au	N/A	\$39.95† 60GB 24Mb/s	\$39.95† 60GB 24Mb/s	\$39.95† 60GB 24Mb/s	✗	✓	\$99 12mths	✗
Matilda Internet aDSL2+	www.matilda.net.au	N/A	\$59.95†* 1GB 24Mb/s	\$79.95† 20GB+ 24Mb/s	\$69.95† 10GB+ 24Mb/s	✗	✓	\$10 1mth	✗
Netspace Home ADSL2+	www.netspace.net.au	N/A	\$39† 5GB+ 24Mb/s	\$69† 20GB+ 24Mb/s	\$49† 10GB+ 24Mb/s	✗	✓	\$99 6mths	✗
Netspace 50M ADSL2+	www.netspace.net.au	N/A	\$49.95† 5GB 24Mb/s	\$79.95† 10GB 24Mb/s	\$59.95† 10GB 24Mb/s	✗	✓	\$99 6mths	✗
OptusNet Cable	http://personal.optus.com.au	\$29.95† 300MB+ 9.77Mb/s	\$39.95† 2GB+ 9.77Mb/s	\$69.95† 20GB+ 9.77Mb/s	\$69.95† 20GB+ 9.77Mb/s	✗	✓	\$89 12mths	✗
OptusNet DSL Direct	http://personal.optus.com.au	\$29.95† 300MB+ 24Mb/s	\$39.95† 2GB+ 24Mb/s	\$69.95† 20GB+ 24Mb/s	\$69.95† 20GB+ 24Mb/s	✗	✓	\$89 12mths	✗
Primus up to 8000kbs	www.primus.com.au	\$29.95† 1GB 8Mb/s	\$29.95† 1GB 8Mb/s	\$69.95† 20GB 8Mb/s	\$59.95† 10GB 8Mb/s	✗	\$4	\$118 1mth	✗
Spin Internet	www.spin.net.au	N/A	\$59.95†* 5GB+ 8Mb/s	\$69.95† 20GB 8Mb/s	\$69.95† 20GB 8Mb/s	✓	✓	\$99 6mths	✓
Spin ADSL2+	www.spin.net.au	\$29.95†* 1GB+ 24Mb/s	\$29.95†* 1GB+ 24Mb/s	\$69.95† 40GB 24Mb/s	\$59.95† 20GB 24Mb/s	✗	✓	\$50 12mths	✗
Telstra BigPond Cable	www.bigpond.com	\$29.95† 200MB^ 7.8125Mb/s	\$59.95† 12GB^ 7.8125Mb/s	\$59.95† 12GB^ 7.8125Mb/s	\$59.95† 12GB^ 7.8125Mb/s	✗	\$2.50	\$189 12mths#	✗
TPG Residential ADSL2+	www.tpg.com.au	\$29.99† 600MB 24Mb/s	\$39.99 3GB 24Mb/s	\$69.99 40GB+ 24Mb/s	\$49.99 18GB 24Mb/s	✗	✓	\$59.95 12mths	✗
Westnet Broadband2+	www.westnet.com.au	\$29.95†* 500MB 24Mb/s	\$39.95† 2GB+ 24Mb/s	\$69.95† 10GB+ 24Mb/s	\$69.95† 10GB+ 24Mb/s	✗	\$0.83	\$139 12mths	✗
Yourhub Real Residential ADSL 2+	www.yourhub.com.au	N/A	\$39† 5GB 24Mb/s	\$59† 15GB 24Mb/s	\$49† 10GB 24Mb/s	✓	\$1	\$180 12mths	✗
Yourhub Real Corporate ADSL 2+	www.yourhub.com.au	N/A	\$60† 5GB 24Mb/s	\$80† 15GB 24Mb/s	\$70† 10GB 24Mb/s	✓	\$1	\$180 12mths	✗

Regular broadband ISPs (1.5Mb/s or less)

Netcall ADSL (Bundled)	www.netcall.com.au	\$19.90†* 256MB+ 256Kbit/s	\$34.90†* 10GB+ 512Kbit/s	\$74.90†* 48GB+ 1.5Mb/s	\$44.90†* 16GB+ 1.5Mb/s	✓	✓	\$145 12mths	✓
Netcall ADSL (Unbundled)	www.netcall.com.au	\$24.90* 256MB+ 256Kbit/s	\$39.90* 10GB+ 512Kbit/s	\$79.90† 48GB+ 1.5Mb/s	\$49.90* 16GB+ 1.5Mb/s	✓	✓	\$145 12mths	✓
aaNet ADSL (Bundled)	www.aanet.com.au	\$19.90†* 256MB+ 256Kbit/s	\$34.90†* 10GB+ 512Kbit/s	\$74.90†* 48GB+ 1.5Mb/s	\$44.90†* 16GB+ 1.5Mb/s	✓	✗	\$145 12mths	✓
aaNet ADSL (Unbundled)	www.aanet.com.au	\$24.90* 256MB+ 256Kbit/s	\$39.90* 10GB+ 512Kbit/s	\$79.90† 48GB+ 1.5Mb/s	\$49.90* 16GB+ 1.5Mb/s	✓	✗	\$145 12mths	✓
AAPT ADSL	http://home.aapt.com.au	\$29† 500MB 256Kbit/s	\$39† 12GB 512Kbit/s	\$49† 15GB 1.5Mb/s	\$49† 15GB 1.5Mb/s	✓	✓	\$0 1mth	✓
AlwaysONLINE ADSL	www.alwaysonline.net.au	\$29.95* 500MB 256Kbit/s	N/A	\$75†* 12GB 1.5Mb/s	\$75†* 12GB 1.5Mb/s	✓	✓	\$100 6mths	✓
Aspark ADSL	www.aspark.com.au	N/A	\$53.95† 25GB 512Kbit/s	\$53.95† 25GB 512Kbit/s	\$99.95† 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
AuNix Broadband	www.aunix.com.au	\$24.95* 200MB 256Kbit/s	\$39.95† 25GB 512Kbit/s	\$74.95† 35GB 1.5Mb/s	\$74.95† 35GB 1.5Mb/s	✓	✓	\$89 6mths	✓
Aussiewide Residential ADSL	www.aussiewide.com	N/A	\$59.95 30GB 512Kbit/s	\$59.95 30GB 512Kbit/s	\$99 30GB 1.5Mb/s	✓	✓	\$110 6mths	✓
Australia On Line ADSL	www.australiaonline.net.au	\$24.95* 200MB 256Kbit/s	\$39.95 2GB+ 512Kbit/s	\$79.95 20GB 1.5Mb/s	\$64.95 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Australis Internet ADSL	www.australis.net	\$24.95* 200MB 256Kbit/s	\$49.95 5GB 512Kbit/s	\$64.95 50GB 512Kbit/s	\$59.95 30GB+ 1.5Mb/s	✓	✓	\$139 1mth	✓
Beagle Internet ADSL	www.beagle.com.au	\$19.95* 200MB 256Kbit/s	\$45.95 5GB 512Kbit/s	\$57.95 30GB 512Kbit/s	N/A	✓	✓	\$157 1mth	✓
BIT.net	www.bit.net.au	\$19.95† 2GB 256Kbit/s	\$29.95† 2GB 512Kbit/s	\$69.95† 40GB 512Kbit/s	\$59.95† 10GB 1.5Mb/s	✓	✓	\$132 6mths	✓
BKB Internet Home ADSL	www.bkb.net.au	N/A	\$49.95 1GB^ 512Kbit/s	\$64.95 10GB^ 512Kbit/s	\$89.95 10GB^ 1.5Mb/s	✓	✓	\$139 6mths	✓
Blackstump ADSL	www.blackstump.net.au	\$19.95†* 200MB 256Kbit/s	\$44.95† 5GB 512Kbit/s	\$55.95† No limit 512Kbit/s	\$72.45†* 10GB 1.5Mb/s	✓	✓	\$108 6mths	✓
Bluemaxx ADSL	www.bluemaxx.net.au	\$24.95* 200MB 256Kbit/s	\$54.95 5GB 512Kbit/s	\$74.95 30GB 512Kbit/s	\$84.95 10GB 1.5Mb/s	✓	✓	\$105 12mths	✓
Broadband Anywhere ADSL	www.broadbandanywhere.com.au	N/A	\$39.95 5GB^ 512Kbit/s	\$69.95 40GB^ 512Kbit/s	\$69.95 10GB^ 1.5Mb/s	✓	✓	\$132 12mths	✓
BBI Flat Rate DSL	www.brownbear.net.au	\$32.95 2GB 256Kbit/s	\$39.95 2GB 512Kbit/s	\$74.95 60GB 512Kbit/s	\$59.95 10GB 1.5Mb/s	✓	✓	\$119 6mths	✓
BBI Excess DSL	www.brownbear.net.au	\$32.95* 2GB 256Kbit/s	\$39.95* 2GB 512Kbit/s	\$74.95* 60GB 512Kbit/s	\$59.95* 10GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Brown Bear DSL/Phone	www.brownbear.net.au	\$19.95†* 1GB 256Kbit/s	\$29.95†* 1GB 512Kbit/s	\$69.95† 60GB 512Kbit/s	\$59.95† 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Bullet ADSL	www.bullet.net.au	\$34.95* 500MB 256Kbit/s	\$49.95* 5GB 512Kbit/s	\$69.95* 25GB 512Kbit/s	N/A	✓	✓	\$150 12mths	✓
CEInternet Broadband	www.ceinternet.com.au	\$29.95* 200MB 256Kbit/s	\$59.90* 1GB 1.5Mb/s	N/A	\$85.90* 10GB 1.5Mb/s	✓	\$2.50	\$99 1mth	✓
Central Coast Internet ADSL	www.cci.net.au	\$34.95* 500MB 256Kbit/s	\$54.95* 1GB 512Kbit/s	\$64.95* 10GB 512Kbit/s	N/A	✓	✓	\$132 6mths	✓
Chariot ADSL	www.chariot.net.au	\$29.95* 500MB 256Kbit/s	\$39.95 2GB 512Kbit/s	\$59.95 40GB 512Kbit/s	\$69.95 25GB 1.5Mb/s	✓	✓	\$110 6mths	✓
Comcen Internet ADSL	www.comcen.com.au	\$19.95†* 300MB 256Kbit/s	\$29.95†* 2GB+ 512Kbit/s	\$59.95† No limit 512Kbit/s	\$49.95† 15GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Comstech Systems ADSL	www.comstech.com.au	\$33.95 500MB 256Kbit/s	\$46.50 3GB 512Kbit/s	\$72.50 50GB 512Kbit/s	\$61.95† 10GB 24Mb/s	✓	✓	\$133.95 6mths	✓
Concept Networks ADSL	www.conceptual.net.au	\$29.95* 500MB 256Kbit/s	\$39.95† 1GB 512Kbit/s	\$69.95 30GB 512Kbit/s	\$69.95* 15GB 1.5Mb/s	✓	✓	\$99 6mths	✓
CyberOne ADSL	www.cyberone.com.au	\$19.95* 200MB 256Kbit/s	\$39.95* 1GB 512Kbit/s	\$64.95† No limit 512Kbit/s	\$74.95† 15GB+ 1.5Mb/s	✓	✓	\$99 1mth	✓
Cyberspace Internet ADSL	www.cyberspace.net.au	\$21.95†* 200MB 256Kbit/s	\$46.95†* 5GB 512Kbit/s	\$57.95† No limit 512Kbit/s	\$79.95†* 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
dataoz Residential ADSL	www.dataozsolutions.com.au	N/A	\$44.95 3GB 512Kbit/s	\$69.95 50GB 512Kbit/s	\$54.95 10GB 1.5Mb/s	✓	✓	\$129.95 6mths	✓
Diamond Telecom ADSL	www.diamondtelecom.com.au	N/A	\$54.95† 25GB 512Kbit/s	\$54.95† 25GB 512Kbit/s	\$89.95† 35GB 1.5Mb/s	✓	✗	\$80 6mths	✓
DigiPlus	www.digipius.com.au	\$29.95† 1GB 256Kbit/s	\$42.95† 5GB 512Kbit/s	\$49.95† 10GB 512Kbit/s	\$89.95† 10GB 1.5Mb/s	✓	✗	\$99 1mth	✓
Dinkum Internet ADSL	www.dinkum.net.au	\$24.95 200MB 256Kbit/s	\$49.95 5GB 512Kbit/s	\$69.95 30GB 512Kbit/s	\$69.95 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓

Name	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kbit/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kbit/s, minimum 10GB data limit)	High-speed plan (under \$100, at least 1.5Mbit/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Regular broadband ISPs (1.5Mbit/s or less)									
Dodo ADSL	www.dodo.com.au	\$19.99* 500MB* 256Kbit/s	\$29.99* 1.5GB* 1.5Mb/s	\$79.99* 25GB* 1.5Mb/s	\$49.99* 10GB* 1.5Mb/s	✓	\$1.90	\$129.99 1mth	✓
DragNet ADSL	www.dragnet.com.au	\$29.95* 200MB* 256Kbit/s	\$45.95* 1.5GB 512Kbit/s	\$69.95 15GB 512Kbit/s	\$79.95 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Ecomtel ADSL	www.ecomtel.com.au	\$19.90* 300MB 256Kbit/s	\$54.90* 100GB 512Kbit/s	\$54.90* 100GB 512Kbit/s	\$74.90* 100GB 1.5Mb/s	✓	✓	\$120 1mth	✓
EFTel ADSL	http://w3.efitel.com	\$19.95* 500MB 256Kbit/s	\$39.95* 2GB 512Kbit/s	\$59.95* 25GB* 512Kbit/s	\$69.95* 25GB* 1.5Mb/s	✓	✓	\$125 12mths	✓
Empcom ADSL	www.empcom.net	N/A	\$39.95 5GB 512Kbit/s	\$54.95 20GB 512Kbit/s	\$69.95 20GB 1.5Mb/s	✓	✗	\$129 6mths	✓
Fonebox ADSL	www.fonebox.com.au	\$29.90* 200MB 256Kbit/s	\$49.90 5GB 512Kbit/s	\$79.90 30GB 512Kbit/s	\$79.90 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Broadband Internet	www.broadband.net.au	N/A	\$55 40GB 512Kbit/s	\$77 100GB 512Kbit/s	\$99 80GB 1.5Mb/s	✓	✓	\$132 6mths	✓
Green Tree Frog ADSL	www.greentreefrog.net.au	N/A	\$55* 40GB 512Kbit/s	\$77* 100GB 512Kbit/s	\$99* 80GB 1.5Mb/s	✓	✓	\$132 6mths	✓
Hande Communications ADSL - Shaped	www.hande.net.au	\$32.95 500MB* 256Kbit/s	\$44.95 1.5GB* 512Kbit/s	\$79.95 30GB* 512Kbit/s	\$84.95 10GB* 1.5Mb/s	✓	✓	\$119.95 1mth	✓
Hande Communications ADSL - Usage Based	www.hande.net.au	\$32.95* 500MB* 256Kbit/s	\$44.95* 1.5GB* 512Kbit/s	\$69.95* 15GB* 512Kbit/s	\$89.95* 15GB* 1.5Mb/s	✓	✓	\$119.95 1mth	✓
Hugobit Home ADSL Broadband	www.hugobit.com.au	\$29.95* 250MB* 256Kbit/s	\$49.95* 1GB* 512Kbit/s	\$69.95 25GB* 512Kbit/s	\$79.95 20GB* 1.5Mb/s	✓	✓	\$110 12mths	✓
IF Com ADSL	www.ifcom.com.au	\$24.95* 200MB 256Kbit/s	\$49.95* 25GB 512Kbit/s	\$49.95* 25GB 512Kbit/s	\$84.95* 35GB 1.5Mb/s	✓	✓	\$99 12mths	✓
Infinity Plus Residential DSL	www.infinityplus.net.au	N/A	\$54.95* 25GB 512Kbit/s	\$54.95* 25GB 512Kbit/s	\$84.95* 30GB 1.5Mb/s	✓	✓	\$100 6mths	✓
ISP ADSL	http://w3.isp.net.au	\$33* 3GB 256Kbit/s	\$42.90* 5GB 512Kbit/s	\$77 No limit 512Kbit/s	\$69.30* 25GB 1.5Mb/s	✓	✓	\$132 6mths	✓
IntegrityNet ADSL	www.integritynet.com.au	\$29.95* 200MB 256Kbit/s	\$59.95* 5GB 512Kbit/s	\$79.95* 20GB 512Kbit/s	\$99.95* 15GB 1.5Mb/s	✓	✓	\$139 12mths	✓
Internet Information Group ADSL	www.iig.com.au	N/A	\$59* 5GB 512Kbit/s	\$79* 15GB 1.5Mb/s	\$99* 15GB 1.5Mb/s	✓	✓	\$120 12mths	✓
Internode Home ADSL	www.internode.on.net	N/A	\$39.95 5GB 512Kbit/s	\$69.95 30GB 512Kbit/s	\$54.95 10GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Interworks ADSL	www.interworks.net.au	\$34.95* 1GB 256Kbit/s	\$49.95* 5GB 512Kbit/s	\$79.95 No limit 512Kbit/s	\$99.95* 25GB 1.5Mb/s	✓	✓	\$119 3mths	✓
ISage Internet ADSL	www.isage.aunz.net	\$24.95* 200MB 256Kbit/s	\$44.95 25GB* 512Kbit/s	\$79.95 35GB* 1.5Mb/s	\$76.95* 15GB* 8Mb/s	✓	✓	\$99 6mths	✓
Ispace ADSL	www.ispace.net.au	\$29.95* 200MB 256Kbit/s	\$49.95 5GB 512Kbit/s	\$79.95 60GB 512Kbit/s	\$79.95 15GB 1.5Mb/s	✓	✓	\$120 6mths	✓
ITEL ADSL	www.itel.net	\$34.95* 4GB 256Kbit/s	\$49.95* 4GB 512Kbit/s	\$54.95* 60GB 512Kbit/s	\$79.95* 60GB 1.5Mb/s	✓	✓	\$129 12mths	✓
ADSL Broadband	www.itginternet.net.au	\$31.79* 200MB 256Kbit/s	\$54.89 5GB 512Kbit/s	\$65.89 30GB 512Kbit/s	\$76.89 15GB 1.5Mb/s	✓	✓	\$95 6mths	✓
Jazinet ADSL	www.jazinet.net	N/A	\$49.50 25GB 512Kbit/s	\$49.50 25GB 512Kbit/s	\$88 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
Jump Internet ADSL	http://jumpnet.com.au	\$30* 200MB 256Kbit/s	\$50* 2GB 512Kbit/s	\$80 30GB 512Kbit/s	\$80 15GB 1.5Mb/s	✓	✗	\$0 12mths	✓
Koala ADSL	www.koalatelecom.com.au	\$29.95* 500MB 256Kbit/s	\$39.95* 3GB 512Kbit/s	\$64.95* 50GB 512Kbit/s	\$49.95* 10GB 1.5Mb/s	✓	✓	\$129.95 6mths	✓
Lets Go ADSL	www.letsgo.com.au	\$29.95* 200MB 256Kbit/s	\$59.95 30GB 512Kbit/s	\$59.95 30GB 1.5Mb/s	\$79.95 30GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Lizzy ADSL	www.lizzy.com.au	\$24.95* 200MB 256Kbit/s	\$39.95 2GB* 512Kbit/s	\$79.95 20GB 1.5Mb/s	\$64.95 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Lucidity	www.lucidity.net.au	N/A	\$59.95* 25GB 512Kbit/s	\$79.95* 35GB 1.5Mb/s	\$79.95* 35GB 1.5Mb/s	✓	✓	\$120 1mth	✓
Communications ADSL	www.matilda.net.au	\$29.95* 200MB 256Kbit/s	\$49.95* 1GB 512Kbit/s	\$59.95 10GB* 512Kbit/s	\$69.95 10GB* 1.5Mb/s	✓	✓	\$110 1mth	✓
Matilda Internet DSL	www.matilda.net.au	\$29.95* 200MB* 256Kbit/s	\$49.95* 3GB* 512Kbit/s	\$79.95* 25GB* 1.5Mb/s	\$89.95* 10GB* 1.5Mb/s	✓	✓	\$99 12mths	✓
McPherson Media ADSL	www.mcmedia.com.au	\$29.95* 300MB 256Kbit/s	\$29.95* 1GB* 512Kbit/s	\$69.95* 20GB* 1.5Mb/s	\$54.95* 10GB* 1.5Mb/s	✓	✓	\$99 6mths	✓
Netspace Home ADSL	www.netspace.net.au	\$29.95* 300MB 256Kbit/s	\$29.95* 1GB* 512Kbit/s	\$69.95* 20GB* 1.5Mb/s	\$54.95* 10GB* 1.5Mb/s	✓	✓	\$99 6mths	✓
Netspace SOHO ADSL	www.netspace.net.au	N/A	\$49.95 15GB 512Kbit/s	\$79.95* 20GB 1.5Mb/s	\$64.95* 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
NetSpeed ADSL	www.netspeed.com.au	\$19.95* 200MB 256Kbit/s	\$34* 1GB* 512Kbit/s	\$74* 30GB* 512Kbit/s	\$74* 10GB* 1.5Mb/s	✓	✓	\$2 139 12mths	✓
North Queensland Telecom ADSL	www.nqtelcom.com.au	\$24.95* 200MB 256Kbit/s	\$49.95* 1GB 1.5Mb/s	\$49.95 25GB 512Kbit/s	\$89.95 35GB 1.5Mb/s	✓	✓	\$99 1mth	✓
OptraWeb ADSL	www.optraweb.com.au	N/A	\$44.95 5GB 512Kbit/s	\$74.95 60GB 512Kbit/s	\$81.95 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
OptraWeb Excess DSL	www.optraweb.com.au	\$32.95* 2GB 256Kbit/s	\$39.95* 2GB 512Kbit/s	\$74.95* 60GB 512Kbit/s	\$81.95* 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
OptraWeb Bundle DSL	www.optraweb.com.au	\$27.95* 2GB 256Kbit/s	\$34.95* 2GB 512Kbit/s	\$69.95* 60GB 512Kbit/s	\$80.95* 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Ozefone Digital	www.ozefone.com.au	\$34.50* 1GB 256Kbit/s	\$44.50* 2GB 512Kbit/s	\$89.50* 10GB 1.5Mb/s	\$89.50* 10GB 1.5Mb/s	✓	✓	\$129 6mths	✓
OzISP ADSL	www.ozisp.com.au	N/A	\$48 40 1.5GB 512Kbit/s	\$79.75 30GB 512Kbit/s	\$91.30 10GB 8Mb/s	✓	✓	\$132 6mths	✓
Pacific Internet DSL	www.pacific.net.au	\$29.95* 250MB 256Kbit/s	\$39.95 1GB 512Kbit/s	\$54.95 No limit 512Kbit/s	\$49.95* 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Primus Flexible Broadband	www.primus.com.au	\$24.95* 500MB 256Kbit/s	\$34.95* 1GB 512Kbit/s	\$69.95* 20GB 1.5Mb/s	\$59.95* 12GB 1.5Mb/s	✓	\$4	\$118 1mth	✓
Quantum ADSL	www.quantumtelcom.com.au	N/A	\$49.95* 25GB 512Kbit/s	\$79.95* 35GB 1.5Mb/s	\$79.95* 35GB 1.5Mb/s	✓	✓	\$140 1mth	✓
Rabbit Internet ADSL	http://rabbit.com.au	\$27.95* 200MB 256Kbit/s	\$34.90* 1GB 512Kbit/s	\$80* 60GB 1.5Mb/s	\$59* 10GB 1.5Mb/s	✓	✓	\$104.50 6mths	✓
Rapid Net ADSL	www.rapidnet.com.au	\$34.95 500MB 256Kbit/s	\$44.95 5GB 512Kbit/s	\$49.95 15GB 512Kbit/s	\$79.95 12GB 1.5Mb/s	✓	✓	\$109 6mths	✓
Realcom ADSL	www.realcomaustr.com.au	\$27.95* 200MB 256Kbit/s	\$54.95 25GB 512Kbit/s	\$54.95 25GB 512Kbit/s	\$94.95 35GB 1.5Mb/s	✓	✓	\$0 12mths	✓
REEDS.NET Internet Services ADSL	www.reeds.net.au	N/A	\$49 25GB 512Kbit/s	\$79.95 35GB 1.5Mb/s	\$79.95 35GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Saco Technology ADSL	www.sacotech.com.au	N/A	\$45.95* 2GB 512Kbit/s	\$75.95* 60GB 512Kbit/s	\$74.95* 15GB 1.5Mb/s	✓	✓	\$129.95 6mths	✓
SimpliciTi ADSL	www.simpliciti.com.au	\$31 500MB 256Kbit/s	\$47 5GB 512Kbit/s	\$57 30GB 512Kbit/s	\$87 10GB 1.5Mb/s	✓	✓	\$99 3mths	✓
Skyways ADSL	www.skyways.net.au	\$29.95* 200MB 256Kbit/s	\$49.95* 10GB 512Kbit/s	\$69.95 No limit 512Kbit/s	\$99.95 30GB 1.5Mb/s	✓	✓	\$109 12mths	✓
Skyways DSL + Phone	www.skyways.net.au	\$29.95* 5GB 256Kbit/s	\$39.95* 10GB 512Kbit/s	\$59.95* No limit 512Kbit/s	\$89.95* 30GB 1.5Mb/s	✓	✓	\$109 6mths	✓
Snowynet ADSL	www.snowy.net.au	\$29.90* 200MB* 256Kbit/s	N/A	\$69.90 No limit 512Kbit/s	\$99.90 No limit 1.5Mb/s	✓	✓	\$110 6mths	✓
Soul ADSL	www.mysoul.com.au	\$29.95 No limit 256Kbit/s	\$44.95* 5GB 512Kbit/s	\$64.95* 10GB 1.5Mb/s	\$64.95* 10GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Southern Cross Telco ADSL	www.sctelco.com.au	\$29.95* 400MB 256Kbit/s	\$39.95* 2GB 512Kbit/s	\$79.95* 30GB 1.5Mb/s	\$79.95* 30GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Spin Internet	www.spin.net.au	\$19.95* 300MB 256Kbit/s	\$29.95* 2GB* 512Kbit/s	\$59.95* No limit 512Kbit/s	\$49.95* 15GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Supernerd SuperDSL	www.supernerd.com.au	\$26.95 1GB 256Kbit/s	\$44.95 10GB 512Kbit/s	\$59.95 40GB 512Kbit/s	\$59.95 15GB 1.5Mb/s	✓	✓	\$60 1mth	✓
TalkTODAY ADSL	www.talktoday.com.au	\$29.95* 500MB* 256Kbit/s	\$41.95* 5GB* 512Kbit/s	\$64.95* 100GB* 512Kbit/s	\$69.95* 30GB* 1.5Mb/s	✓	✓	\$119 6mths	✓
telaustralia Bus ADSL	www.telaustralia.com.au	N/A	\$39.95* 15GB 512Kbit/s	\$79.95* 30GB 1.5Mb/s	\$79.95* 30GB 1.5Mb/s	✓	✓	\$120 6mths	✓
Telstra BigPond ADSL	www.bigpond.com	\$29.95* 200MB* 256Kbit/s	N/A	\$69.95* 12GB* 1.5Mb/s	\$69.95* 12GB* 1.5Mb/s	✓	\$2.50	\$99 12mths	✓
Fat Free Broadband ADSL	www.fatfreebroadband.com	N/A	\$49 25GB 512Kbit/s	\$49 25GB 512Kbit/s	\$89 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
TrumpNet ADSL	www.trump.net.au	\$29.95* 200MB* 256Kbit/s	\$54.95 1GB 512Kbit/s	\$75.95 30GB 512Kbit/s	\$99.95 30GB 1.5Mb/s	✓	✓	\$135 12mths	✓
TSN Broadband	www.tsninternet.com.au	\$29.95 5GB 256Kbit/s	\$39.95 10GB 512Kbit/s	\$69.95 20GB 1.5Mb/s	\$69.95 20GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Unison DSL	www.unisonmobile.com.au	\$27.95* 200MB 256Kbit/s	\$54.95 25GB 512Kbit/s	\$54.95 25GB 512Kbit/s	\$84.70 35GB 1.5Mb/s	✓	✓	\$100 1mth	✓
Westnet Broadband1	www.westnet.com.au	\$29.95* 500MB 256Kbit/s	\$34.95* 1GB 512Kbit/s	\$69.95* 20GB* 1.5Mb/s	\$59.95* 10GB* 1.5Mb/s	✓	\$0.83	\$99 6mths	✓
Winshop ADSL	www.winshop.com.au	\$29.95 500MB 256Kbit/s	\$39.95 3GB 512Kbit/s	\$59.95 15GB 1.5Mb/s	\$59.95 15GB 1.5Mb/s	✓	✓	\$139 12mths	✓
Residential ADSL	www.yourhub.com.au	\$34.95* 300MB 256Kbit/s	\$59.95 5GB 512Kbit/s	\$79.95 15GB 1.5Mb/s	\$79.95 10GB 1.5Mb/s	✓	\$2	\$110 12mths	✗
ZCTS ADSL	www.zcts.net	N/A	\$49.50 25GB 512Kbit/s	\$49.50 25GB 512Kbit/s	\$88 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓

Key: * ISP charges excess usage fees when you exceed your download limit. † This price only available if bundled with long distance telephony from the ISP. ‡ Additional download allowance available with this plan for use in off-peak periods; ‡ ISP combines sent and received data when calculating usage. # Minimum BigPond Cable setup fee is based on 12-month contract with modem included. Telstra does not offer a BYO modem option.



masterclass

STEP BY STEP TRAINING

HARDWARE

SOFTWARE

GADGETS

WHAT'S COVERED

Overview

In this new Masterclass, Jarrod Spiga walks you through the process of setting up a small business IT infrastructure. No IT training is assumed. At the end of the Masterclass, you should know the fundamentals of setting up a server-based network to run any small business.

ABOUT YOUR TUTOR

Jarrod Spiga

Jarrod is an infrastructure architect and data centre engineer for Visionbytes, a company that provides digital video mining technologies and services to some of the world's largest media companies and many government departments worldwide. Jarrod also works as a technical consultant, assisting businesses during infrastructure installation and upgrade projects.



COURSE SCHEDULE

Sept '07 Analysis

Oct '07 Preparation

Nov '07 Server hardware

Dec '07 The Windows path, part 1

Jan '08 The Windows path, part 2

Feb '08 The Windows path, part 3

Mar '08 The Linux path, part 1

Apr '08 The Linux path, part 2

May '08 The Linux path, part 3

Jun '08 Mac in the mix

Jul '08 System management tools

Aug '08 Swing migrations

Building a server network for small business

You might be handy with a PC, but what if you had to look after the back end of your business? How would you set up and manage the servers, the network and the server applications?

Planning your network

This first part details many of the factors that need to be considered during the planning stage.

Regardless of what kind of business you're in, all small businesses have limited access to resources — be it funds, staff, time or any other resource. A small business network infrastructure needs to reflect this. It must be available all of the time, secure, robust, easy to administer, fault-tolerant (to a reasonable extent), simple to use and cost-effective. In reality, though, the lack of resources available usually means that most networks are ad hoc and put together with little planning or forethought. The result is a complex kludge of computers and devices that are difficult to work with, let alone manage.

The challenge for any small business is to bring order to chaos in an efficient manner. The best way to achieve this — whether you've got a pre-existing infrastructure or are starting anew — is to analyse your requirements and develop a plan based on those requirements that will not be detrimental to the continued operation or establishment of your business.

DOCUMENT EVERYTHING!

The one point that cannot be emphasised enough is that you must document everything. Write everything down on a notepad if you have to. Draw pictures, diagrams, arrows, boxes —

and don't be concerned about making sure that everything is typed up or entered in a digital format. Just make sure that you have a record of everything that goes on during the planning and deployment phases.

After, and even during your deployment, there will be numerous occasions where you'll question why you're doing something. If you document everything, you can always review your justification for any decision and find the cause of problems as, or before they occur. It's always nice when the answer is sitting in front of you, instead of having to rack your brain while you're stressed.

Also ensure that you have done enough planning — at the end of the analysis and planning phase, you should have an itemised budget, purchase list and detailed Gantt chart (taking into account lead times, dependencies and contingencies) as a bare minimum. Your staff should also be aware of what changes are going to take place and when — so that they can prepare for any downtime that may occur as a result of your work.

THERE ARE NO STUPID QUESTIONS

You could use one of many techniques to analyse your requirements and come up with



SMALL BUSINESS INFRASTRUCTURE PLANS COME DOWN TO CHOICES — THE FIRST: LINUX VS WINDOWS

your deployment plans, including brainstorming as many ideas as you can think of and systematically ruling out various options, or by taking what you already have in place and evaluating whether there is a better way of doing things.

In general, small business infrastructure plans come down to choices. The first one that springs to everyone's mind is Linux vs Windows, but there's more to it than that. Your plan should consider your data and voice networks (including whether VoIP is viable for your business and how that affects your network design), redundancy, capacity, scalability, reliability, support, fault-tolerance, the tools and applications in use and disaster recovery scenarios, among other things.

Another important thing to remember is that Rome wasn't built in a day — and neither should your infrastructure be. You should adopt a staged approach to rolling out your infrastructure and develop latter stages of your plan as your deployment proceeds.

MORE BANDWIDTH IS NOT ALWAYS BETTER

One of the biggest traps that people make when building a small business network is that they design it the same as they would build their home network. At home, enthusiasts typically have a couple of PCs on the network connected to a gigabit switch. Bandwidth contention is generally not an issue because there are only ever a couple of users who are contending for the available bandwidth. In a business network, you often have dozens of users who are competing for network resources. When one user saturates the gigabit link coming from the server, everyone else's network performance to that server is affected.

Providing gigabit speeds all the way to the workstation may seem like a good idea, but those kinds of speeds are rarely actually required. Fast Ethernet to the workstation and Gigabit Ethernet to the server is almost always good enough and ensures that access to network resources are provided in a more equitable manner.

LINUX IS FREE AS IN BEER

For the cost-conscious, Linux can be an

outstanding choice for server or workstation builds — provided that you have the familiarity and skills in order to administer it properly and the penguin fits in with what you do. For instance, if your business does software development, most of your staff members are more technically minded and Linux on the workstation might be a good choice. It's a different story if you run an accountancy firm.

Don't get me wrong — I love using Linux and have deployed a number of Linux servers and workstations for a variety of businesses, provided that Linux fits the purpose. However, if no-one in the organisation knows how to, or is game enough, to try to SSH, login, su, cat, grep, vi and service restart, then Linux probably isn't the best choice to base the organisation's infrastructure off. That said, it still shouldn't be discounted from being used as a secondary server.

IF YOU CHOOSE

WINDOWS, BECOME A PARTNER

Licensing costs are normally the first argument against choosing to go down the Windows path, but what if you found out that you could obtain enough licences to run two servers and ten clients for internal use for less than the price of a single retail Windows Vista Ultimate package per year?

The first step in obtaining cheap Microsoft licences is to become a registered member of

the Microsoft Partner Program — something which is free to sign up to. Once you've registered, order the Microsoft Action Pack Subscription (MAPS). This is an annually paid subscription and is currently priced at \$699 — for that cash, you'll get an initial shipment consisting of your software licences and CD media as well as three quarterly updates.

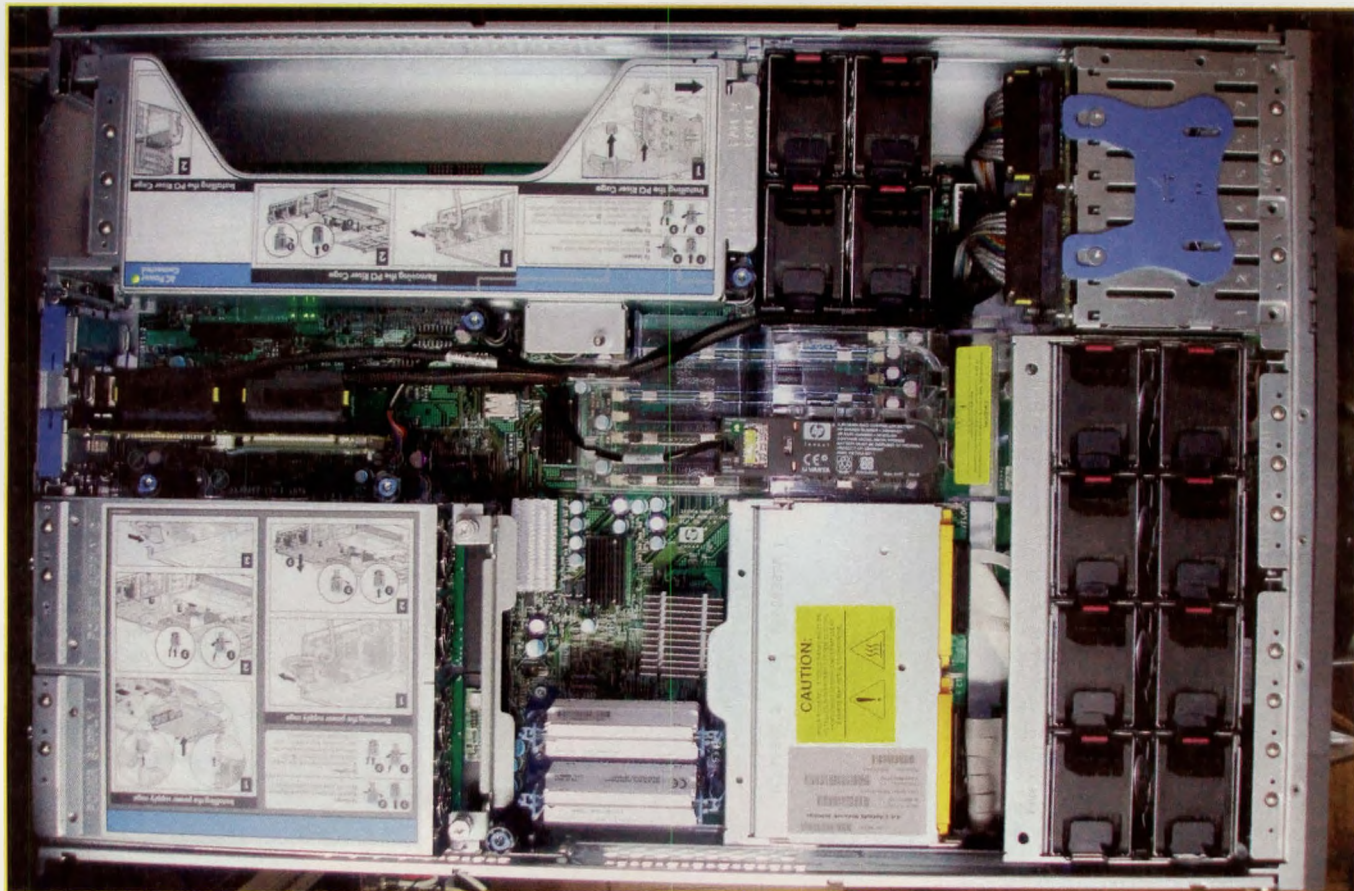
At the time of writing, MAPS includes one server licence for Windows Server 2003 R2, SBS 2003 R2, SQL Server 2005 and Exchange Server 2007, ten client access licences for each server product, and licences for all workstation components — including Windows Vista Business, Office 2007 Professional, Visio 2007 and Project 2007. Other goodies such as Microsoft Operations Manager and Project server are also included.

The MAPS licensing terms state that you can use this software for internal business use, but you may not use it for 'production' purposes — for instance, hosting another company's web site or email using licenses from a MAPS is a no-no.

Without a doubt, this is by far the cheapest way to obtain an initial allocation of Microsoft licences. Best of all, similar subscriptions are also available should your business become a certified or gold partner. For full details on the Australian Action Pack, see <https://partner.microsoft.com/Australia/program/management/actionpack>.



Register for the Microsoft Action Pack Subscription (MAPS) and get software licences and CD media.



IN AN IDEAL WORLD, WE'D ALL HAVE TEMPERATURE- AND HUMIDITY-CONTROLLED DATA ROOMS

IF YOU USE SBS SERVER, BEWARE OF THE LIMITATIONS

Microsoft Small Business Server is a fantastic product for many small businesses — provided that the limitations placed on the software don't restrict you from doing what you need to. Before choosing to use SBS, ensure that you are not planning on having more than 75 users or devices on your network, and that you don't need to establish domain trust relationships with other organisations. If you foresee that your organisation will be restricted by these limitations, SBS may not be the best choice.

BRAND NAME OR BEIGE BOX?

The second crucial cost-related decision is usually reserved for the hardware question — and the same question applies to servers and workstations: is it best to purchase a server from a brand-name vendor, or will PCs from the local store suffice?

For workstations, I personally could go either way. The build quality of brand-name PCs is generally higher than what you can

build using commodity parts, but the extra price premium is not worth the money for many people.

However, servers are a bit of a different story. Because your servers are going to be depended upon in order to run day-to-day activities for your business, it's a big risk to buy off-the-shelf components. The question to ask is how well your business will survive without a server for a day while you diagnose and fix a power supply fault. What impact will such a disaster have on your business?

Redundancy is the sole reason why I would suggest buying brand-name servers. The HP ProLiant DL380 G5 server shown in the image is built with high-availability in mind. The power supplies are redundant, as are the fans. RAM can be removed and replaced while the server is running, and the serial-attached SCSI (SAS) drives are all hot-swappable. A failure of any of these components can be diagnosed and fixed without rebooting the server.

The second reason for buying a brand-name

The HP ProLiant DL380 G5 server is built with high availability in mind. The failure of any of these components can be diagnosed and fixed without rebooting the server.

server is the quality of components. A run-of-the-mill PC store will usually try and sell you 'server' configurations built on a SATA disk subsystem with either integrated or software-dependent RAID controllers. A brand-name provider will usually use SCSI or SAS drives and hardware RAID controllers, often with battery backup caches installed. This type of configuration performs considerably better than what you'd get at a local store — and will most likely be more reliable too (SATA disk warranties are typically in the order of two years, while SCSI drives are renowned for continually operating for in excess of three years).

THINK OF THE ENVIRONMENT

The environment that your server is located in will affect your server's lifetime. In an ideal world, we'd all have temperature- and humidity-controlled data rooms such as those you'd see in high-end data centres, but budgets rarely stretch that far.

At minimum, you want to store your server in a location that is not in direct sunlight, is cool

(preferably air conditioned), is not too humid so that condensation can damage your server, but is not too dry so that static electricity is easily generated, and has limited access (so regular Joes can't 'fiddle').

If your budget stretches that far, consider buying a proper rack. It doesn't have to be a full 42RU rack; half racks are cheaper and often easier to manage. It also doesn't need to have sides or doors — the main purpose for having a rack is to store all of your core equipment in the one easily manageable location.

THE HOST WITH THE MOST

In general, hosting your web site and email services from your office is fine — as long as your internet connection remains online. Even though most ADSL services are described as being 'always-on', outages occur from time to time. As a result, you should also consider what impact a connection dropout will have on your infrastructure — even if that outage occurred at some ungodly hour in the morning (just because you stop working at 5pm, that doesn't mean email doesn't stop being delivered until 9am the next morning). Likewise, consider what would happen if your server failed outside of business operating hours.

SMTP servers generally queue mail that cannot be delivered for 24 hours, after which a non-delivery report is returned to the sender (the actual time can vary depending on how each SMTP server is configured). Assuming that you can bring your server online within this timeframe, you won't lose messages (although, they may be delayed by up to four hours in many cases).

If situations like this are unacceptable for your business, it could be worthwhile contacting a hosting provider and enquiring about redundant MX hosting — or DNS or web hosting, depending on exactly what services you host within the office.

DIAL ON DEMAND

Alternatively, you could consider adding redundancy to your internet connection. Many ISPs provide a dialup access facility should your DSL link go down. If you host services at your office, it might be worthwhile upgrading that vanilla ADSL modem (which was supplied when you signed up with a router) that is capable of establishing a dialup link to your ISP should the router detect that no broadband link is working.

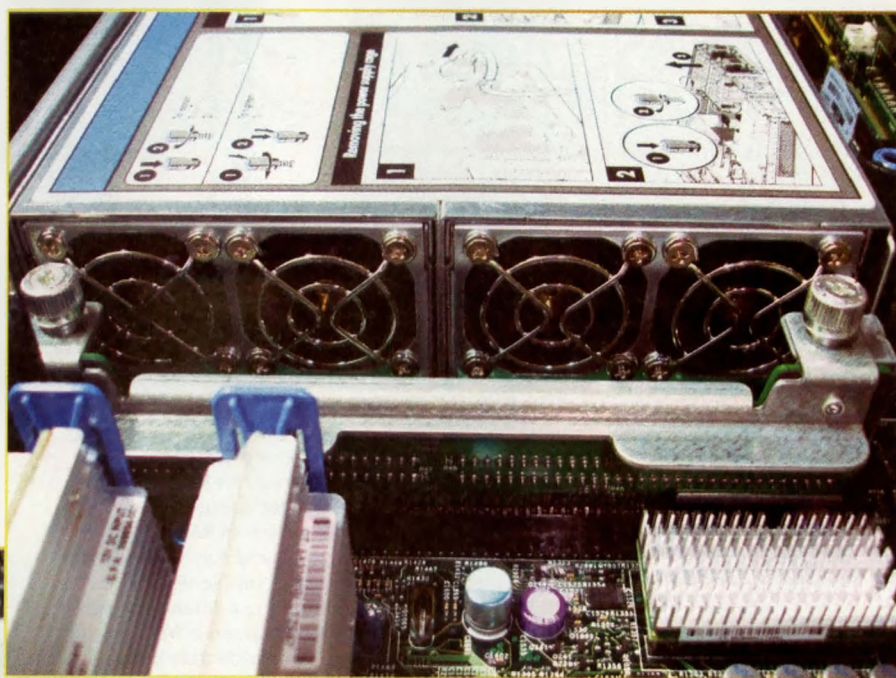
UPS, I DID IT AGAIN

The installation of a good quality UPS is almost always done. What is often overlooked is what devices are connected to the UPS. The two common mistakes are to connect everything to the UPS, or to not connect enough things.

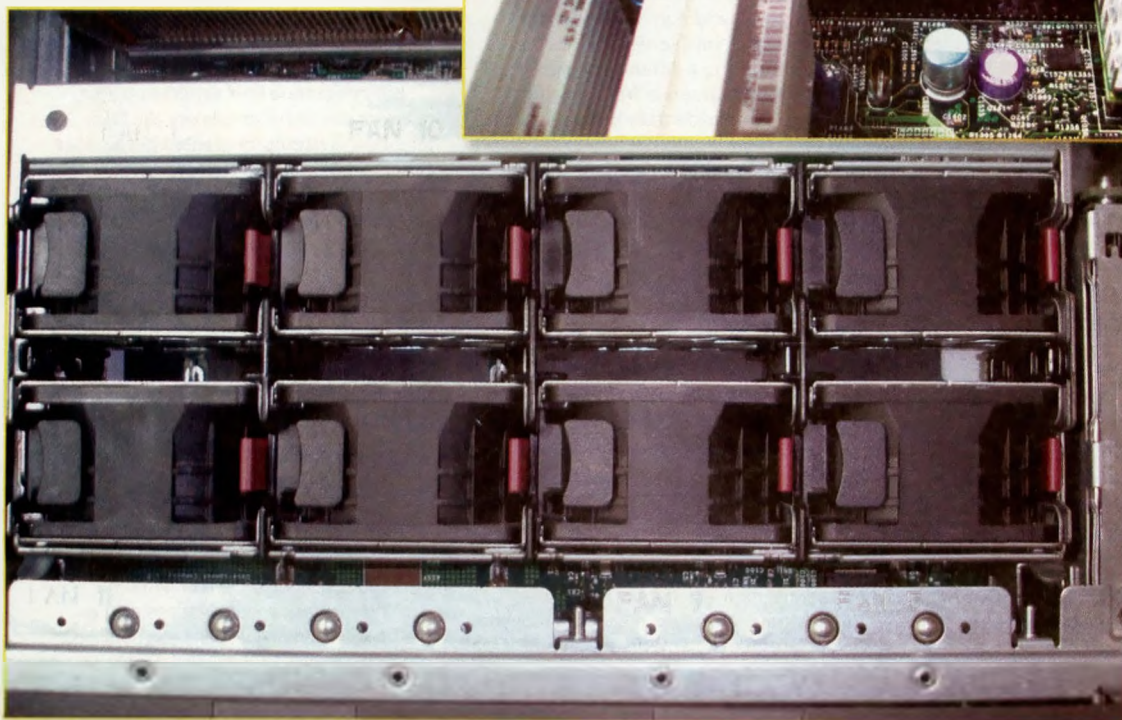
Connecting everything in your server room puts excessive load on the UPS and often drains all power from the batteries before you have the chance to gracefully shut down servers.

Likewise, if you don't connect certain devices such as the monitor connected to your server, you may also not be able to initiate a graceful shutdown. In both cases, there is little point in having a UPS, as a prolonged outage will have the same effect as yanking out a power cable.

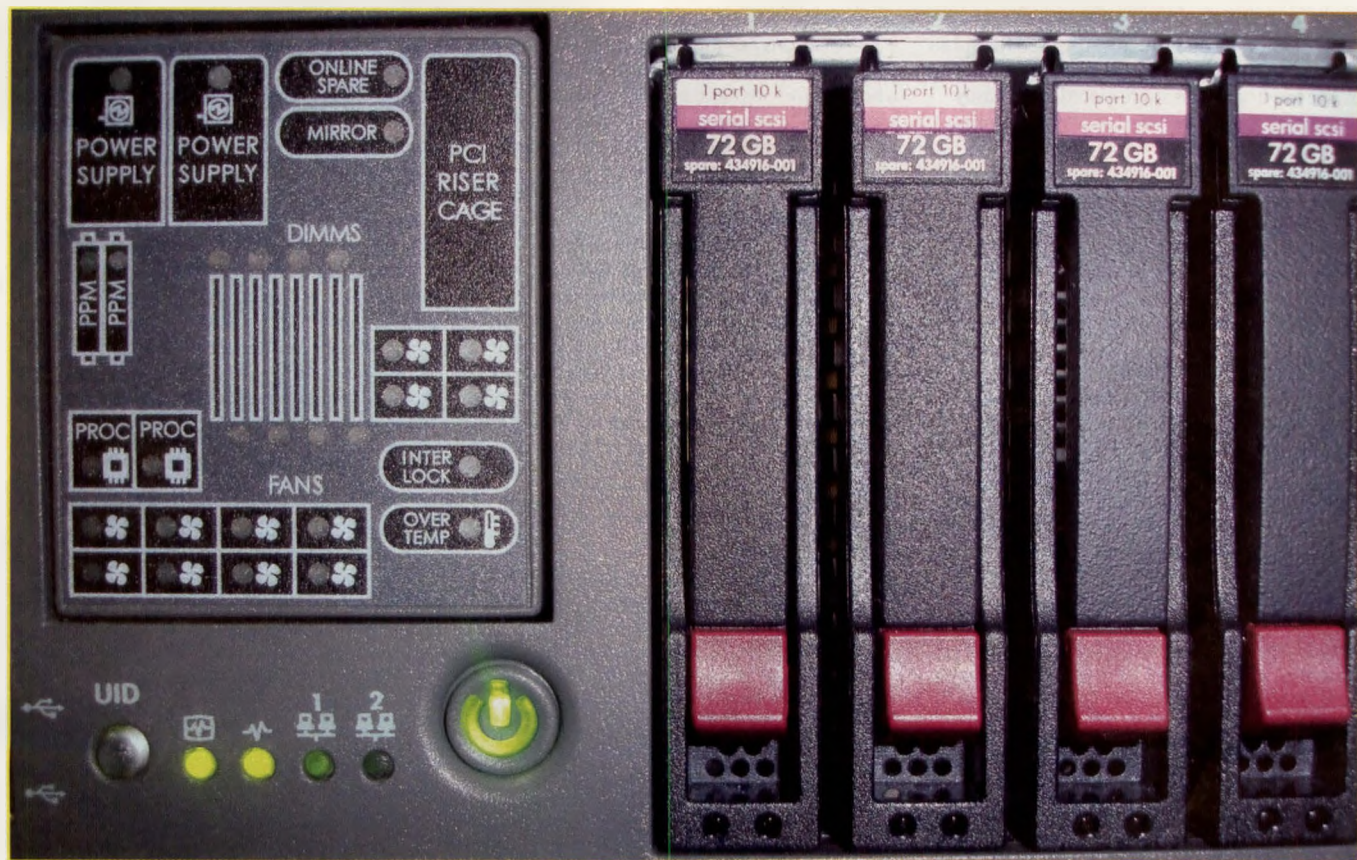
The three things to remember when



▲ The HP's fans are redundant...



▲ ...and so are the power supplies.



The serial-attached SCSI (SAS) drives are all hot-swappable.

purchasing your UPS is to ensure that you can provide enough power for graceful shutdowns to occur, that you have the right devices connected to the UPS and that the UPS provides some way to instigate a shutdown while the office is unattended (usually, this is done via a serial connection to one server, but network-enabled modules are also available).

In order to calculate your power requirements, invest in a wattmeter — which can be picked up from most electronics or hardware stores. Measure the current that each device you plan on connecting to the UPS draws and use an online UPS capacity calculator in order to determine what capacity of UPS you require in order to provide the runtime that you require (you typically want at least seven minutes' runtime — two minutes' grace period to ensure that short blackouts don't trigger shutdowns, and five for the actual shutdown to occur).

VOLUNTARY REDUNDANCY

Most small businesses cannot afford to have N+1 redundancy for all components and systems in the infrastructure — nor is it justifiable to, in most cases. This doesn't mean that you shouldn't implement any redundancy measures — imagine what a disaster a single disk failure in a RAID-0 array would have on your main server?

The two components that fail most frequently on servers are hard disk drives and power supplies. As such, it's always a good idea to implement RAID-1, RAID-5 or RAID-6 disk arrays and purchase redundant power supplies for your server. Connecting each power supply to a different power circuit will also prevent your server from shutting down should you accidentally blow a fuse on one circuit.

BUDGET BACKUPS

Providing redundancy to your systems does not make you immune from disaster — if a crane drops its load on your server room, you're going to be screwed if you don't have proper backup procedures.

Tape backup is the most flexible and redundant — especially for the long-term archiving of data. However, tape drives and their media are expensive, and their capacities may not meet your requirements in today's media-rich world.

Portable USB hard disk drives are a cost-effective solution, but don't forget to consider the security of your data. You don't want these drives to fall into anyone else's hands, especially if confidential data is being backed up!

Lastly whatever you do, make sure that you take your latest backup media set off-site at least daily. That way your backup doesn't get crushed when your server does.

YOU'RE THE VOICE

Over the last couple of years, radical philosophy shifts have been made in regards to voice communications. We have gone from using small PABX systems to VoIP solutions, the latter being cheaper, more flexible and more scalable for most small businesses.

But integrating VoIP services on your network does add complexity. We take telephony systems for granted because we expect zero dropouts and good-quality audio on each and every call. Once you enable VoIP, you need to implement Quality of Service (QoS) controls across your entire network in order to ensure that these demands are provided. Implementing QoS adds more contention to your network resources, especially on your connection to the internet. [ETC](#)

NEXT MONTH

- Masterclass will detail the preparatory steps that you should take before deploying your server. If you have any questions relating to this article — be they of a general nature or workplace-specific — you can forward them to Jarrod via masterclass@acpmagazines.com.au. A selection of questions and detailed answers will be published weekly on the apcmag.com web site.



workshops

HANDS-ON WITH HARDWARE AND SOFTWARE

HARDWARE

SOFTWARE

GADGETS

Top tweaks: make Vista work

Mike Williams shows you some Vista tweaks that boost speed, security and productivity — for free.

REQUIREMENTS

WINDOWS VISTA

A copy of Vista will be enough for most of our tweaks, although one or two will need the Business, Enterprise or Ultimate editions.

RESOURCES

- We've covered plenty of Vista tips here, but if you're hungry for more then there are plenty to be found online. TweakVista (www.tweakvista.eu), The Vista Forums (<http://thevistaforums.com>) and NeoWin (www.neowin.net) all have lots to offer.

All of those sites have advice on add-ons, but if you're looking for gadgets then don't miss the official site at <http://microsoftgadgets.com/gallery>. Several other Vista features seem much more interesting once you've discovered the associated web site. You can discover how your Vista Performance score (Control Panel > Performance...) compares with others at <http://shareyourscore.com>, or share your Windows Calendar for free online at <http://lcalshare.com>.

Upgrading to Windows Vista can be an uncomfortable experience, as it all feels very different from what you've become used to. Persevere, though, and it'll quickly get easier. You'll find your way around the revamped Start menu, master Explorer, figure out how Search works, and after a week or two you'll feel you've seen all there is to see. But you'd be wrong.

While the 'cosmetic' Vista changes are important, there's a whole lot more beneath the surface. New productivity tools that don't appear on any menu, Registry changes that can improve your performance, vital security settings that are hidden deep in a properties dialog box... Vista's packed with obscure yet important features that can help you get more out of your system. And that's why we're illuminating them with a collection of more than 30 of the best Vista tips and tweaks around.

Vista is big. Very big. The installation requires a minimum of 15GB hard drive space, which is perhaps too much for an underpowered laptop. If you've yet to upgrade, though, vLite (www.vlite.net) helps you build a custom Vista install disc that includes only the components you need. If your system is also short on graphics power, then you could try turning off the flashy but resource-hungry Aero interface (click Control Panel > Personalisation > Window Color and Appearance

HANDY TIP

Vista's CompletePC backup stores your data in a single large VHD (Virtual Hard Disk) file. If you want to restore just one or two files from the backup, then the easiest way is with VHDmount, which makes your system think the file is actually a local hard drive and lets you access it with drag-and-drop ease. See the MSDN blog entry at <http://tinyurl.com/ywsf2c> for instructions.

> Open Classic Appearance Properties, and choose the Windows Vista Basic colour scheme). This should deliver some improvement in speed, although you'll lose Aero-related extras like Flip3D, the graphical task switcher.

ACE ADD-ONS

Throwing away new Vista features probably seems a bad idea, even for a speed improvement. So what about adding new ones? Or more to the point, restoring ones you thought you had already? Vista has lost the ability to create password-protected Zip files, for instance. To gain that extra protection you'll need to install a third-party archiving tool, such as PKWARE's free SecureZip (www.securezip.com).

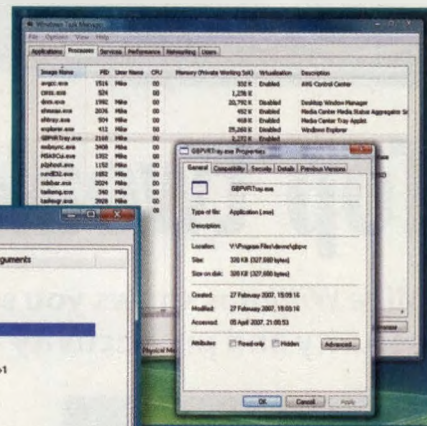
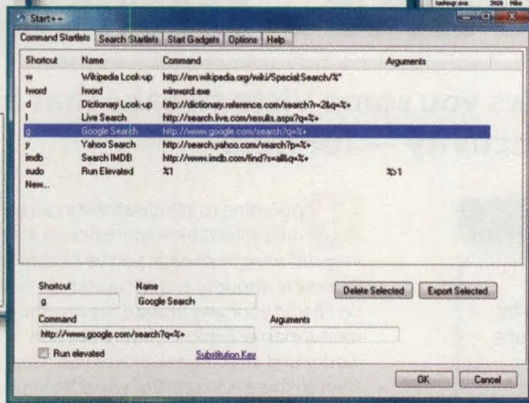
Do a little digging in Vista and you'll unearth dozens of options that will optimise your computer's performance and generally make life easier.





Automate web and file searches (and much more) with the very smart Start++.

Hold down Ctrl and spin your mouse wheel to resize Explorer image thumbnails, desktop icons, or change to a different window view.



What's that mysterious Task Manager process? Right-click it and select Properties to find out more.

And while XP lets you choose how much disk space System Restore would consume, Vista grabs 15 per cent and offers no obvious way to change that. Fortunately, a quick Registry change can give you back some control. Launch RegEdit, visit HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\SystemRestore\cfg and set DiskPercent to whatever you'd like System Restore to take. Worst of all, major changes to DirectSound mean audio effects APIs like EAX no longer work, and so game sound will often be reproduced in plain audio only. Creative's new Alchemy Project brings all those fancy sound effects back for many games, though, and you can download it from <http://preview.creativelabs.com/alchemy>.

Vista has changed significantly in Explorer and the Start menu, and if you've just moved from XP then it might be something of a shock at first. But don't worry, there are simple ways to make you feel more at home. You won't find a Run box on the Start menu, for example, but that's easily called up by holding down the Windows key and pressing R. Or you can restore it to its old place by right-clicking the Start menu, then selecting Properties > Start menu > Customize, and checking 'Run command'.

Try not to spend too much time pining for XP, though, because the new Vista ways are generally

better. If you want to improve boot time by removing Startup programs, say, don't use MSConfig.exe. Windows Defender has a much more powerful utility that lists all your Startup programs, gives you detailed information about them and provides the option to disable a program from the Startup list, or remove it altogether. Click Tools > Software Explorer from within Windows Defender to try it out.

There are plenty of other handy tools bundled with Vista that were previously only available in other versions of Windows. The Snipping Tool, for instance, is a Tablet PC utility that will help you grab part of the current screen, then store it to disk — far more convenient than PrtSc. Launch it from \Windows\System32\SnippingTool.exe (search for Snipping if it's not there). Among the more fundamental changes are some small but handy tweaks to Explorer. Hold down Shift as you right-click a Vista folder, for instance, and you'll see a context menu option 'Open Command Window here', which opens a command line at that folder. And holding down Shift as you right-click on files reveals another extra option — 'Copy as path', which copies the full path of the file to the clipboard.

ENHANCED FIREWALL

The security benefits of Vista are a major reason for upgrading, but it's not all perfect. While

the new firewall is much better than the one provided with XP, it still doesn't properly monitor outgoing connections, so if you're infected with malware then there's nothing to stop it phoning home. The best solution is probably to use another firewall (PC Tools' free Vista-compatible offering is at www.pctools.com/firewall), but if you want to stick with Vista's solution there is a possible workaround.

Click the Start button, type Firewall in the Search box, and press Enter to launch Advanced Security.Click Firewall Settings and set Outbound Connections to 'Block' for the Domain, Private and Public profiles. Click OK, and now nothing can dial out. Click Inbound Rules, then select New Rule, choose Program and click Next. Click Browse and navigate to the path to the first executable you want to allow online (\Program Files\Internet Explorer\IExplore.exe, say), then keep clicking Next for the rest of the wizard. Enter a name for the rule, click Finish, then repeat the process for any other applications you want to go online. And that's it: nothing gets online unless you've explicitly created a rule for it.

USER ACCOUNT CONTROL

You can't do very much in Vista without User Account Control (UAC) popping up and asking if you really, really mean that, which is why some people turn it off as quickly as possible (Control

DO THIS...

PROTECT YOUR PRIVACY

The Vista search tool works well in part because it indexes metadata (file tags) as well as content. So if you've tagged your holiday photos with the place they were taken, for instance, then searching for 'Morocco' should bring up all your photos for last year. Metadata is more problematic in the business world, though, where you might sometimes add comments to reports that you wouldn't want all your customers to see. And then someone puts the

offending document online, and before you know it you're a headline on The Register.

Fortunately, Vista now provides an easy way to clear selected metadata — or all of it if you like. Right-click a file, select Properties > Details > Remove Properties And Personal Information > Remove The Following Properties From This File, and they're gone forever. That should save any red faces.

Wipe personal metadata from your files in a couple of clicks.



HANDY TIP

You can turn the Vista Aero interface off if it's too much for your laptop, but then your smart features look 3D, so customising it might be the best compromise. Go to Computer > System Properties > Advanced System Settings, click Settings in the Performance section, then disable features like transparent glass, shadow and fade effects. Vista should move faster, but other important Aero features will still be active.

Panel > User Accounts > Turn User Account Control On or Off). We really don't recommend that, however, as you'll remove some very useful protection. And anyone with the Vista Business, Enterprise or Ultimate editions has a better option available.

Click Start, launch secpol.msc, then go to Security Settings > Local Policies > Security Options, and you'll see nine different ways to tweak UAC without turning it off altogether. Change the 'Prompt for consent' option to 'Elevate without prompting' and you won't see many UAC prompts anymore, although it'll still be in the background applying some restrictions (detecting and prompting to allow application installations, for instance).

Keep in mind that turning off the prompts does compromise your security. We're recommending this only as a better option than turning UAC off altogether, and the best option of all is to leave it fully active. These tweaks can also come in handy if you want to make UAC even tougher than its default settings. If you set 'Control behaviour of the elevation prompt for administrators in Admin Approval Mode' to 'Prompt for credentials', Vista will require a password to be entered every time the UAC dialog appears. This is way too much hassle when you're the only person using the system, but if you want to prevent your kids from tinkering when you're not there then it's worth a try.

PERFORMANCE

Vista demands a lot from your system hardware, but there are a few clever tricks you can use to regain some speed. One option is to allow Vista's write-back cache, where disk writes don't happen

immediately but are instead held in the cache for a while. This allows disk reads to go ahead with less chance of interruption, and so can make a real difference to your system speed, but of course if there's a power cut then any data in the cache will be lost. If you're willing to take the risk, launch Device Manager, expand Disk Drives, right-click a Disk drive, click Properties, then the Policies tab and check the 'Enable advanced performance' box.

Windows Vista Media players have their own performance boost in a new feature called the Multimedia Class Scheduler Service (MMCSS), which allows them to claim a greater share of CPU or graphics resources while they're running. As a result, you should see smooth, stutter-free playback, even on systems with antivirus tools, email clients or other programs operating at the same time.

You probably don't want background applications to be closed down altogether, so MMCSS reserves 20 per cent of the CPU just for them. If you've an underpowered processor and playback still stutters then you might want to cut this figure further; if you don't mind the occasional stutter, and background processing is more important, then it's worth trying to increase it.

Either way, the figure you need is at HKEY_LOCAL_MACHINE\Software\Microsoft\Windows NT\Currentversion\Multimedia\SystemProfile\



THESE TWEAKS ALSO COME IN HANDY IF YOU WANT TO MAKE UAC EVEN TOUGHER THAN ITS DEFAULT SETTINGS

SystemResponsiveness, with the decimal value being equivalent to the percentage of CPU time you're reserving for background processes. Keep in mind that this only affects MMCSS-aware players such as Windows Media Player 11, though. A player that doesn't register with MMCSS won't be affected by this tweak.

TROUBLESHOOTING

Vista is probably the most stable version of Windows ever, but, of course, that's talking relatively, and you'll still see plenty of error messages and program crashes. So it's just as well

the much-improved Vista error reporting services are here to help you pick up the pieces.

The Event Viewer, for instance, is now a great problem-solving tool. You won't get the full benefit of it without running the Viewer as an Administrator, though, so launch it by selecting Control Panel > Administrative Tools, then right-clicking Event Viewer and selecting Run As Administrator.

You could now expand the Windows Logs section of the tree, choose a log-like System, then scroll through the events. But just as in XP, there's a lot of junk listed that you really don't need to waste your time on. Click 'Filter current log', check the Warning, Error and Critical events and click OK to see only see the most urgent and interesting alerts. This way, you won't lose sleep worrying about minor problems.

The problem with filtering is that you have to apply it each time you open Event Viewer, and to every log of interest, so it's much better to click 'Create a Custom View' instead. Check the same events as before, choose to log 'By source', select 'All sources' and give the view a name. Click this view whenever you launch Event Viewer and it will immediately show you all the problems across every log — a real time-saver.

Vista now also maintains a separate, very in-depth record of all your recent crashes. If someone's complaining that Word keeps falling over, for instance, but they have no specific

details, then click Control Panel > Problem Reports and Solutions > View Problem History to find out more. Select 'Check for new solutions', and Vista will send the details back to Microsoft and give you links to any downloads or articles that might be able to help. That should certainly help with a few technical headaches.

Of all the tips, tweaks and new Vista features we've covered, this could be the most significant. It's a real improvement on XP's one-chance-only error reporting system, and should be the first place to look any time your PC seems unstable. Give it a try: we think you'll be impressed.

DO THIS...

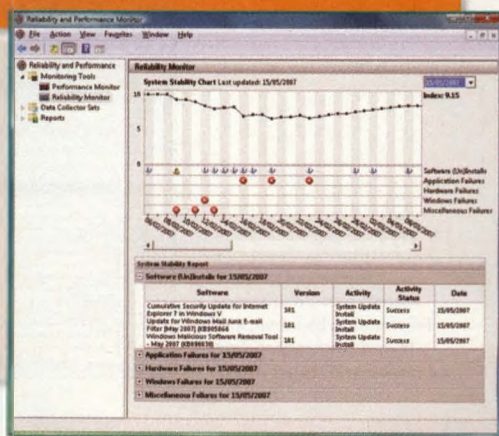
IMPROVE YOUR PRODUCTIVITY

Tweaking your PC or Vista so that it runs faster can be helpful, but the real speed boost usually comes when you find a way to work more that's more efficient.

Within Vista, say, it pays to take advantage of the new keyboard shortcuts available. Hold down the Windows key then press 1 to launch the first shortcut on the Quick Launch bar, 2 to launch the second, and so on (0 launches the tenth). Create a batch file, add a shortcut to the bar, and you can run all kinds of tasks with just a couple of key presses.

And for even more keyboard power, download and install the free Start++ from <http://brandontools.com>. This ingenious tool is a command-line box for the Start menu that supports all kinds of commands and can be customised to add more. Simply type 'w Windows Vista' to instantly view the Wikipedia page about Vista, for instance, or 'play radiohead' to find and play all music files matching the query 'radiohead'.

Launch Perfmon (the Performance Monitor) for an instant record of your recent PC problems.





Create macros to mail

Send your current worksheet or a whole spreadsheet by mail, quickly and securely. *Mary Branscombe* shows you how.

REQUIREMENTS

● EXCEL 2003 OR 2007

We'll run through how to use both versions to send spreadsheets and customise macros.

INSIDE INFO

- Microsoft MVP Ron de Bruin has a SendMail tool on his site (www.rondebruin.nl/mail/add-in.htm). You can decide how much of your spreadsheet to send and whether to send the full set of formulas or just the values. There's no installer, so download and unzip the file and find which folder to copy the SendMail.xla file to. Look in Program Files\Microsoft Office for a folder called Office, which may or may not include a number, and put the file in the Library folder inside that folder. Open a workbook and choose Tools > Add-Ins > SendMail, or, in Excel 2007, Manage > Excel Add-ins > Go. Check the web site for further usage instructions.

When sending a shared spreadsheet, choosing the Send command is easy. But if you only want to send the worksheet, change the password protection, send values rather than the formulas, or prepare the worksheet other ways, then creating a macro saves time.

MAIL BASICS

For sending emails from the same address, use the first set of code; and if you want to add the subject, try the second code:

```
Sub Email()
ActiveWorkbook.SendMail recipients:="your@address.com"
End Sub
```

```
Sub Email()
ActiveWorkbook.SendMail "your@address.com", "This is the latest copy of the spreadsheet"
End Sub
```

You can also store the address, subject line or both in the spreadsheet itself with the first code, or put the address in Cell A1 with the second:

```
.SendMail Sheets("mysheet"). Range("A1").
Value, " This is the latest copy of the
spreadsheet "

.SendMail
Sheets("mysheet").Range("A1").
Value,Sheets("mysheet"). Range("A2").Value
```

To make the code much more flexible, we're going to add the 'wb' variable instead of just calling the current spreadsheet.

```
Sub Email()
```

```
Dim wb As Workbook
```

```
Set wb = ActiveWorkbook
```

```
wb.SendMail "your@address.com", "This is the latest copy of the spreadsheet"
```

```
End Sub
```

When emailing a spreadsheet from Excel 2007, you can use the Prepare > Inspect Document command on the Office menu to check for personal information. You can add this to your macro with the Remove Document Information functions, or you can remove information. This code will delete the range names you use — ideal for not giving away information.

```
Sub DeleteNames()
Dim NameX As Name
For Each NameX In Names
ActiveWorkbook.Names(NameX. Name).Delete
Next NameX
End Sub
```

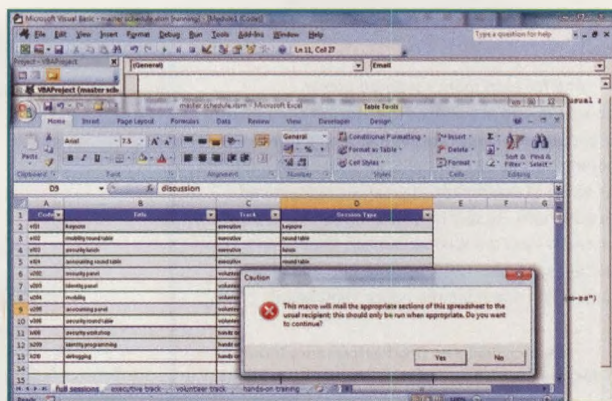
Changing or removing information means you'll want to save a copy of the worksheet and send that — otherwise you'll lose the information in your working copy. You can also convert formulas to values in the copy.

To create a copy, we need two variables for the original and the copy, Originalwb and Copywb, and the command to copy either the current worksheet (ActiveSheet.Copy) or another sheet in the workbook (Sheets("Sheet 3").Copy), or a selection of sheets in the workbook (Originalwb.Sheets(Array("Sheet1", "Sheet3")).Copy). A new unsaved spreadsheet will appear when the macro runs; you'll get a warning about the macros from Excel 2007, and a message from Outlook that a program is sending email for you.

We're going to delete the copy of the file after we send it (with the Kill command), so we need a String variable to point at the TEMP folder to do this safely. If you send a spreadsheet quite often, you may want to add a timestamp to indicate which is the latest version. You could put this in a cell in the worksheet, but it's also easy to append it to the new file name, so we need another String variable to create the new file name. First, we create the variables and copy the contents from the first worksheet, then tell Excel to switch workbooks.

```
Sub Email()
Dim Originalwb As Workbook
```

You can adapt your macros to send different information by email, and include the appropriate addresses and subject lines.




```
Dim Copywb As Workbook
Dim TempFilePath As String
Dim TempFileName As String
Set Originalwb = ActiveWorkbook.ActiveSheet.Copy
Set Copywb = ActiveWorkbook
```

To convert the formulae to values, the code uses `UsedRange` and the worksheet index to select the cells and `Paste Special` to replace the contents. Select the first cell as `Paste Special` — this leaves all the cells selected after the paste — then clear the clipboard with `CutCopyMode` to save space.

```
With Copywb.Sheets(1).UsedRange
.Cells.Copy
.Cells.PasteSpecial xlPasteValues
.Cells(1).Select
End With
Application.CutCopyMode = False
```

If you have range names to remove, put the code to do that here, and if you want to remove personal information from the spreadsheet, do it here as well.

When sending a whole notebook or combining multiple workbooks into one, different code is needed. You'll need a `For...each` loop to go through all the sheets, and a variable to step through the loop.

```
Dim sheetnum As Worksheet
For Each sheetnum In Copywb.Worksheets
sheetnum.Select
With sheetnum.UsedRange
.Cells.Copy
.Cells.PasteSpecial xlPasteValues
.Cells(1).Select
End With
Application.CutCopyMode = False
Copywb.Worksheets(1).Select
Next sheetnum
```



You may want to add a password, or you may not need a password anymore if you're taking the formulas out. (You must enter in your actual password!).

```
Sub UnProtectSheet()
Password = "password1!"
ActiveSheet.Unprotect Password
End Sub

Sub ProtectSheet()
Password = "password1!"
ActiveSheet.Protect Password, True, True
End Sub
```

We'll save the new spreadsheet, copying the existing file name and adding 'Emailed Copy of' at the beginning and today's date on the end; email it, then delete the temporary file. If you want a specific file name:

```
TempFilePath = Environ$("TEMP") & "\\"
TempFileName = "Emailed copy of " &
Originalwb.Name & " " & Format(Now, "dd-mm-yy h-mmss")
With Copywb
.SaveAs TempFilePath & TempFileName & ".xls",
FileFormat:= -4143
On Error Resume Next
.SendMail "your@address.com", "This is the
latest copy of the spreadsheet"
On Error GoTo 0
.Close
SaveChanges:=False
End With
```

Create a button on the worksheet and assign your email macro to that. The code is then included with the spreadsheet, so put it on the toolbar.

```
Kill TempFilePath & TempFileName & ".xls"
End Sub
```

EXCEL 2007

The -4143 code is how Excel refers to .xls files internally. When using Excel 2007, the .xls file format code is 56. An Excel workbook without macros in the compressed .xlsx format is code 51, a macro-enabled .xlsm workbook is 52 and an Excel binary-formatted .xlsb workbook (which can also contain macros) is 56. Convert the file to .csv (6) or .txt (-4158) by filling out the extension and file format code in the macro.

Make your macro copy the file format of the original spreadsheet by adding a `String` and a `Long` variable to store the file extension and the file format code, an `IF` statement to differentiate Excel 2007 and older versions (use `'Val(Application.Version) < 12'` to find out) and then a `CASE` statement to work through the possibilities. Create a message box telling users that they can click `No` or `Yes` in the security dialog when they're copying from a spreadsheet with a macro in it (to keep the same file name, or to get the timestamped file name).

In Excel 2003, right-click the toolbar and use `Customise` to add a button to run your macro to the toolbar. In Excel 2007 you have to add it to the `Quick Access` toolbar. Click the `Office` button and choose `Excel Options > Customise > Macros` and pick your macro. You can also put a shape or graphic in the worksheet, right-click on it and choose `Assign Macro`.

You don't see the email before it's sent, and you can't cancel it, so add a dialog box to avoid any accidental sending by adding this at the start of the macro, after `Sub Email()`. Customise the text in the message boxes depending on what you want the user to see:

```
YesNo = MsgBox("This macro will mail the
appropriate sections of this spreadsheet to the
usual recipient; this should only be run when
appropriate. Do you want to continue?",
vbYesNo + vbCritical, "Caution")

Select Case YesNo
Case vbYes
```

Now add the following code between the `Kill` command and the `End Sub` statement:

```
Case vbNo
MsgBox "Run this macro again when you are
ready to send this worksheet."
End Select
```

You can add extra processing to change information in your worksheet or add loops to send different worksheets to other people. Record what you need to do and add it to the macro.

SPOTLIGHT ON... USING MACROS IN EXCEL 2007

If you don't see the `Developer` tab in Excel 2007, click the `Office` button and select `Excel Options > Popular > Show Developer tab in the Ribbon`. Make sure you save your work as an `XLSM` file rather than an `XLX` — Office 2007 has two file types: one for files with macros and one for files without.

You always know whether a file has macros before you open it, which increases security. You can't get round this by creating an `XLSM` file and changing the extension in `Explorer`, because Excel won't open the renamed file; instead you get a warning that the file is corrupt or the extension

doesn't match. You can start with an `XLX` file; just save it as `XLSM`.

Don't turn macro security off, as you'll have to click `Enable Macros` every time you open the spreadsheet. Instead, create a digital certificate and sign the macro. Look in the `Microsoft Office Tools` program group for `Digital Certificate for VBA Projects`. Name the certificate `Excel Macros`, then go into the `Project Explorer` and select `Tools > Digital Signature > Choose to add the certificate`. A self-signed certificate only works on the PC it was created on.



Get better MP3 and DVD playback in Linux

Laws make it difficult to use Linux for music and DVD playback. But it's not impossible, says *Paul Hudson* and *Graham Morrison*.

REQUIREMENTS

• A LINUX DISTRIBUTION

Fedora 7 is on this month's DVD. Other distros have featured in past months.

Playing DVDs on Linux is illegal in some parts of the world. In other places, the algorithms behind MP3 are considered 'intellectual property' and have to be licensed. Sadly, this affects you, as you're not allowed to break the encryption codes of media covered by digital rights management, and the US allows patents to be granted for algorithms such as MP3 compression and decompression.

If you're thinking, 'I don't want to break any encryption — I just want to watch my DVDs!', then think again: the only legal way to play DVDs is to buy a DVD playback program. There's a reason Windows XP and the Xbox didn't ship with DVD playback support: it costs money to license the DVD decryption layer, known as the Content Scrambling System. On Linux, where virtually no-one has a proprietary DVD player, the only way to play DVDs is to install DeCSS, which decrypts the discs so you can watch them. Sadly, in Australia, the US and Europe, that's illegal, despite all the countries involved agreeing on 'fair use' and that you obviously bought the disc.

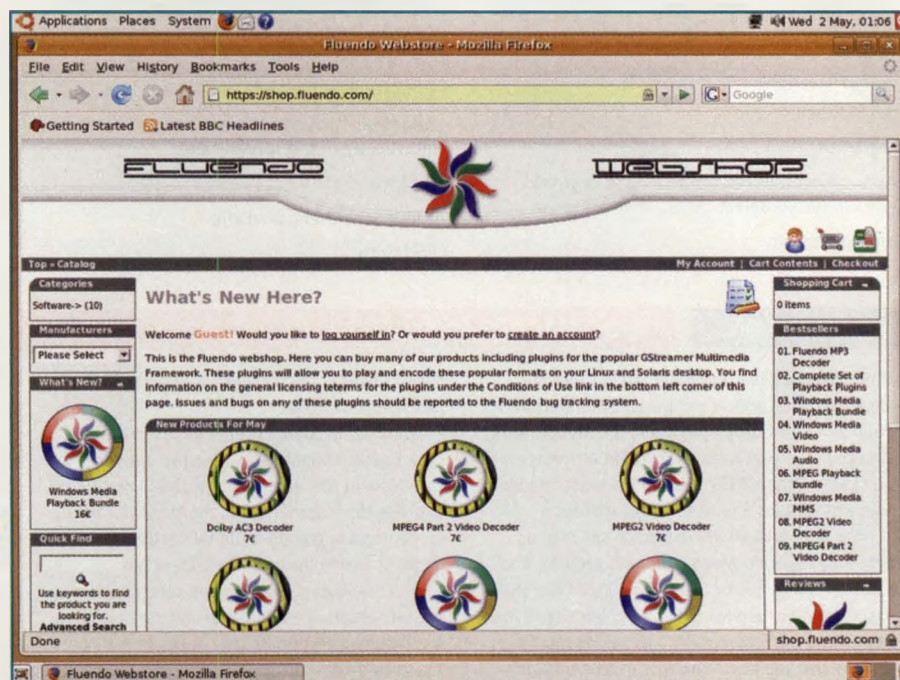
So, keen to avoid such hideous vendor lock-in, Linux developers have created a number of free multimedia codecs that are every bit as good as — and often better than — their proprietary cousins.

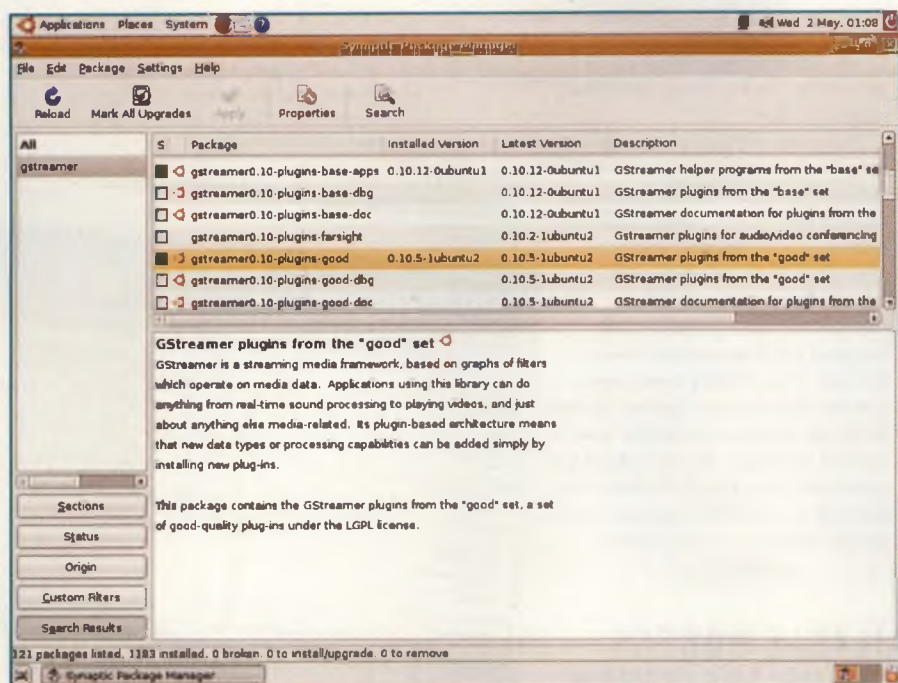
LEGAL MP3s

MP3 is the de facto standard audio compression format, which means it's here to stay. But it's also protected by strong-arm patents, which means most Linux distros won't touch it with a barge pole. To get around the problem, a Spanish company called Fluendo purchased a licence to produce an MP3 decoder, then gave away the result as a free plug-in for Gstreamer. You can find it at <https://shop.fluendo.com>. It's the 'Fluendo MP3 Decoder', which doesn't cost anything. The solution isn't perfect: the free cost isn't the same as true freedom, so although Fluendo is closely involved with Gstreamer development, it can't provide its plug-in as standard.

Still, any sensible distro makes it easy to add a Gstreamer plug-in. Ubuntu, for example, lets you

Fluendo sells proprietary codecs for Gstreamer through its web store. Visit <http://shop.fluendo.com> for more information.





Press Ctrl+F in Synaptic to search for packages that interest you — it saves wading through them all!

install the Fluendo MP3 plug-in straight from Synaptic once you've enabled the Universe and Multiverse repositories. To do that, go to System > Administrator > Synaptic Package Manager. Enter your password, choose Settings > Repositories from Synaptic, then make sure the first four boxes are checked.

Once Universe and Multiverse are enabled and you've refreshed your repositories (click Reload from the tool bar to do this), press Ctrl+F and search for the following: gstreamer0.10-fluendomp3. Once that package is installed, any software that uses Gstreamer (such as Totem) will automatically inherit MP3 support. Excellent!

MULTIMEDIA DESKTOP

Before you quit Synaptic, we want to show you how you can turn your Ubuntu desktop into an all-singing, all-dancing and, more importantly, all-playing multimedia whiz. The secret, as with Fluendo MP3, lies in Gstreamer's plug-in system. If you try searching just for 'gstreamer' you'll see what we mean — there are several dozen packages out there to extend Gstreamer and many programs that are built on top of it! To ensure that you maintain system stability, make

sure you only install the plug-ins marked for version 0.10.

The plug-ins you should be interested in are gstreamer0.10-plugins-good, gstreamer0.10-plugins-bad and gstreamer0.10-plugins-ugly (get them at <http://gstreamer.freedesktop.org/>). The first package is often installed by default and contains well-tested software that is licensed under an open source licence. The second package contains plug-ins that are perhaps not quite so well tested or

recommend installing all three of these packages. You might also want to look around the rest of the search results to see if there's anything else you might need.

BUY YOUR OWN CODECS

If the freely available codecs don't help you, there are three other routes you can try: buying proprietary codecs, installing Helix Player or installing PowerDVD. Starting from the top, you've already seen how Fluendo produces a



THERE'S A REASON XP AND THE XBOX DIDN'T SHIP WITH DVD PLAYBACK SUPPORT: IT COSTS MONEY

which might not have any documentation. The final package isn't a dumping ground for the buggiest extensions out there; instead, it's where plug-ins go if they have distribution problems — if they might infringe on US software patents, for instance.

If you want to help your PC play dozens more media formats and you don't live in the US, we'd

free software MP3 decoder that plugs into Gstreamer. Well, it makes the same thing for MPEG-4, Dolby AC3 and Windows Media Video, although none of these are free. If you don't mind spending 30 euros, you can buy the codecs for Gstreamer legitimately (again, at <http://gstreamer.freedesktop.org/>).

Helix Player is a cost-free version of RealPlayer 10 (which you can also get for Linux), and lets you play back RealVideo and RealAudio content on your Linux box. As for PowerDVD, well, that's pretty much the same thing, just for DVDs rather than streaming media — you buy PowerDVD for Linux and it comes with a legal DVD playback licence, so you can watch all those movies you bought to your heart's content.

It's all very well talking about the various conspiracies that surround audio codecs and the ramifications of using them, but the interesting

DO THIS...

FREE MEDIA FORMATS

If the very idea of companies stopping you watching DVDs you've bought annoys you, it's time you switched to free media formats. In the same way that OpenDocument is slowly taking ground back from the Office file formats, Ogg is making headway in the multimedia world. Like AVI and TIFF, Ogg is really just a 'container' file format, which means it holds multiple different kinds of

files. Right now, though, the main four are Vorbis (for lossy audio, equivalent to MP3), FLAC (for lossless audio), Speex (for super-lossy audio, such as teleconferencing) and Theora (for lossy video). FLAC and Speex are already popping up in weird and wonderful places (Speex, for example, is used in the Xbox Live headsets), but support for Vorbis and Theora is growing.



DO THIS...

STREAM AUDIO

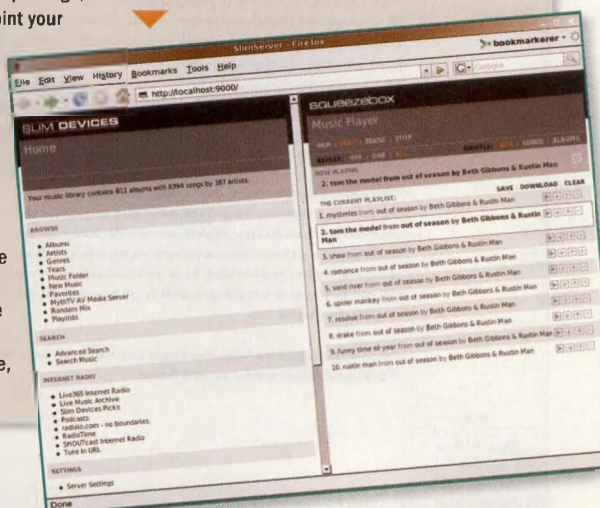
Many of us use Linux as a multimedia server, storing our music and movies in a central place. We then use shared folders over the Samba networking protocol to access these files from whichever computer we're using, dragging the files onto the local desktop before they can be played. But there is an alternative to file copying, and that's to stream the files from the server.

There are several ways to achieve this. One of the easiest is to install an open source package called Slimserver. This is the result of a partnership between community development and corporate support. Slim Devices (www.slimdevices.com), the company that hosts Slimserver development, uses the software to drive its own hardware music players, but at the same time it releases the source code under the terms of the GPL. This means that anyone is free to make their

own changes, as well as redistribute the software for free.

Most distros will include the Slimserver package, and once it's installed you just need to point your web browser at port 9000 on your media server. Slimserver then needs to build a database out of your music collection. Then, you'll be able to browse your collection through the web-based interface and build your own playlists. The clever part is that you don't need a hardware player to listen to your music. Instead, either download the free software player, Softsqueeze, or point your generic playback software to the same URL as the server, plus 'stream.mp3'. You'll hear the music you've selected in the web interface, and this includes net radio channels.

Slim Devices uses an open source server to stream music to its hardware — but you don't even need the hardware!



IF THE FREELY AVAILABLE CODECS DON'T HELP YOU, THERE ARE OTHER ROUTES YOU CAN TRY

part comes from working with them. Many of us rely on compressed audio, whether that's streaming internet radio or listening to music on your MP3 player, and Linux is well-suited to creating your own. As you can imagine, encoding audio within Linux is the usual struggle with command line options, weird file dependencies and strange file locations. But as with everything else in the land of Linux, the trade-off is control. Encoding audio with Linux gives you an unprecedented degree of control over how your audio sounds.

ENCODING VORBIS

Ogg Vorbis, the most popular open codec for audio, is freely available with almost every Linux distribution we can think of. It arguably sounds better than an MP3 encoded at the same bit rate, and many avid listeners liken it to Apple's closed but highly regarded AAC Audio. The only problem you might have with an Ogg Vorbis file is finding a compatible hardware player, but you can still find plenty of software applications that will play Ogg Vorbis files — from Apple's iTunes to NullSoft's WinAmp. And of course, every Linux media player will play 'ogg' files without thinking about it, and will often let you create your own files too, but it can be easier just to use the command line.

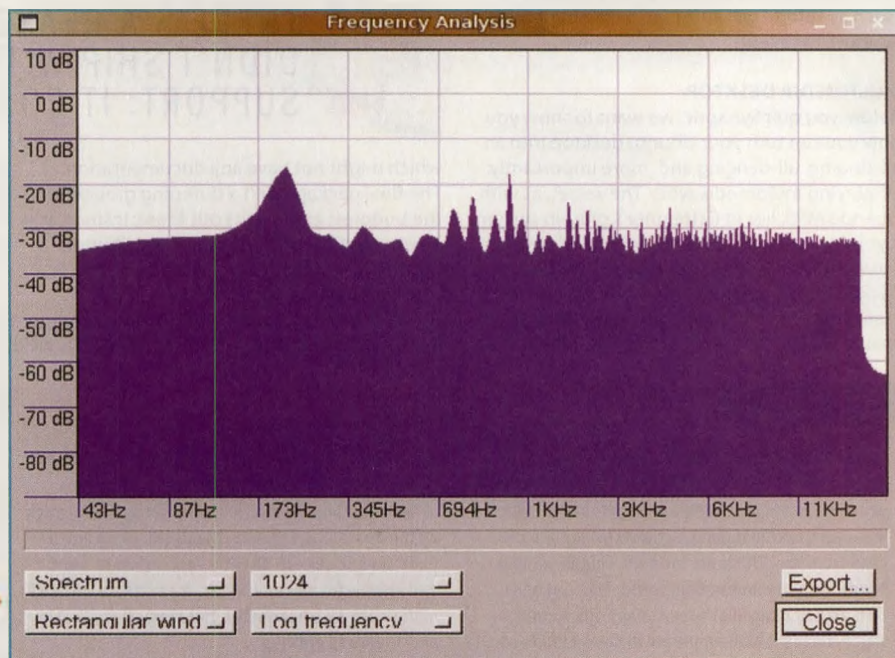
INSTALLING VORBIS-TOOLS

The command you want is 'oggenc', which is easy enough to remember. If it's not installed on

your Linux system then you'll need to install a package called 'vorbis-tools'. This includes the 'oggenc' command, as well as its decoding counterpart, 'oggdec'. Many media players use these same commands for their own encoding and decoding routines.

Unlike other Linux commands, you can get away without reading the manual, as typing 'oggenc filename' is all that's needed to convert either a Windows WAV file or a Mac AIFF file to

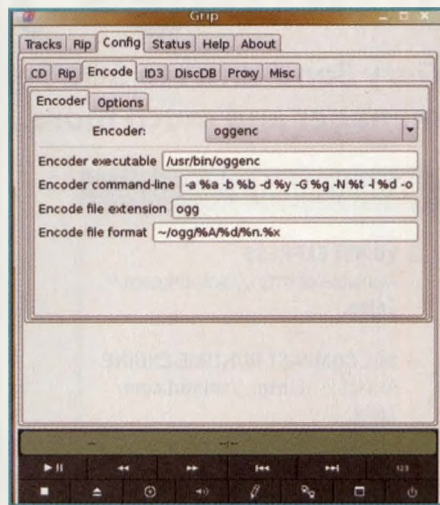
Ogg Vorbis. This creates an ogg file with a default quality of '3', on a scale of -1 to 10 (use the --quality=n parameter to change the default). These .ogg files are encoded using a variable bit rate, which means that the number of bits used to encode the data varies according to the content of the audio. If a chunk of audio contains fewer frequencies, it can be encoded at a high bit rate; higher frequencies use a lower bit rate. This creates a higher overall average bit



Lossy audio codecs cut swathes of data out of the inaudible parts of the recording. This Ogg Vorbis file, for example, drops all high frequencies.



It's easier for Linux applications such as Amarok to play open codecs like Ogg Vorbis than closed ones like MP3.



Avoid the hassle of the command line by using a GUI such as grip for the Gnome desktop.

rate than fixing the value for the duration of the audio.

Audio frequencies need to be taken into account, because the Ogg Vorbis encoder removes sections of the audio spectrum that various studies have shown you're less likely to notice. This is analogous to JPEG compression in images, where the more compression you use, the more visible artefacts are generated. But as with images, it is possible to encode audio without losing anything, to create a bit-for-bit copy of the original. This is thanks to another open codec — Flac, the Free Lossless Audio Codec (<http://flac.sourceforge.net/>).

TAKING THE FLAC

Flac has a couple of important advantages over generic bit-for-bit compression schemes such as Zip or Bzip2. The first is the compression ratio. Using either Zip or BZip2 yields bad results, as

the algorithm knows nothing about the nature of the audio data. However, Flac can make educated guesses about which sections are likely to be repeated.

The result is that you can expect to compress your music between 30 to 50 per cent with Flac, which is typically 30 per cent more than you can with plain Zip. Secondly, it's designed to be streamed, and can be decoded in chunks as the data arrives. Also, because Flac is a bit copy of the original file, it's also the only way you can currently compress multi-channel surround audio, such as DTS or AC3 files.

Any open format will be well-supported on a Linux distribution, and there are plenty of players for other operating systems that can cope with any codec you throw at them. VLC is a good example, as the Linux, Windows and OS X versions all play a huge variety of files, including

proprietary formats and open codecs like Flac and Ogg Vorbis. It can even stream audio and video to clients running on other machines. Things are harder if you need to play these files on your MP3 player. Many won't support Ogg Vorbis or Flac, although a few will. Devices from iAudio and iRiver play both formats.

But there's another option, and that's to replace the firmware in your current device with an open source variant that supports Ogg Vorbis, Flac and many others. The firmware to use is called Rockbox (www.rockbox.org/), and can be installed on a wide variety of hardware including most Apple iPods and Archos, Sandisk and Toshiba devices. There's a slight risk that installation may damage your equipment, so be cautious, but what you get is a free and functional digital audio player that can play almost anything you care to throw at it. 

SPOTLIGHT ON...

DVD PLAYBACK

You might think it strange that an operating system with so many DVD players isn't capable of playing your deluxe boxed collection of *Lost*. This is thanks to the spectre of Digital Rights Management. Linux has the capability but not the code, and the codes are only licensed to proprietary players. The open source nature of many Linux DVD players prohibits such a deal being made because, if the source code for the player is freely available, the coded routines used to decrypt the movie would be relatively easy to decode. But as you've no doubt read, these codes have already been 'cracked', and libraries to decode commercial DVDs are available for every operating system. But the legality of these libraries is seriously contested in much of Europe

and the US, which precludes their inclusion in a Linux distribution.

However, there are legal alternatives. One option is to run a native Linux DVD player. The most widely used is called LinDVD (www.intervideo.com/jsp/LinDVD.jsp), a copy of the ubiquitous WinDVD software for Microsoft. This player feels very dated by modern standards, but for a small fee it does get the job done. It's even bundled in the commercial versions of the Mandriva Linux distribution and the Japanese Linux distribution, TurboLinux.

Another possible option would be to run a Windows DVD application using the Wine emulation libraries, or even a virtual machine emulator.



Most Linux movie players have DVD playback capability but are missing the vital code to play commercial discs.



Manage your photos

Gary Bond turns to SQL Server Compact database to create an image manager and much more...

REQUIREMENTS

- **VB.NET EXPRESS**
Available at <http://snipurl.com/1ojbe>.
- **SQL COMPACT RUNTIME ENGINE**
Available at <http://snipurl.com/1ojbl>.
- **SQL COMPACT SDK**
Available at <http://snipurl.com/1ojbp>.

Photos! We have thousands! Digital cameras make photos so easy to take, we find ourselves snapping everything. We're in an even worse mess with image files than we are with documents. To help us out, let's put together a database driven utility that scans a folder, a drive or a whole machine and gives us a thumbnail of each image it finds. It will be a good project for learning a couple of new techniques too: getting the thumbnail of the image in the first place, and then storing the picture in the database.

We have often relied on the Jet database engine working with Access data files for home projects. With maintenance built into the code to compact the file occasionally, they have been a good project data store. So long as the project was mainly single-user, we have relied on Access for some commercial projects too. That may be about to change.

In January of this year, Microsoft updated its compact database and included support for desktop development. This is very interesting, since scaling up an SQL Compact project to support multiple users looks a much better bet, due to its close ties with larger versions of SQL Server. It is worth looking through the feature sheet available on the Microsoft site, but a couple of features really grabbed our eye: databases up to 4GB, optional 128-bit encryption of data file, transaction support, minimal install, same code can now be used for desktop and mobile devices and, oh, one other detail — it's free.

We could not resist, and just had to take a look at this SQL Server family member. We

HANDY TIP

In this project, we have had a look at ways to connect to the new SQL database offering from Microsoft. These are databinding, provided almost for free by Visual Studio, and custom ADO code. To use these, our advice would be to utilise databinding for simple projects. You get so much value for money, it seems pointless coding up a 'one table, one form' application any other way. For more complicated projects, we use custom coding. This offers more freedom to follow good object-oriented design, but you have to do much of the heavy lifting yourself. Databinding with complicated projects means you also have to get your hands dirty, so the advantage here is not so defined. Try both and see which you feel most comfortable with.

usually find the best way to learn about some new technology is to build something with it, and so chose this as the database for this month's project. As regards the database schema; the thumbnail gives a pictorial cue, and together with the image name and location we can make a start sorting out the mess that is the 'My Pictures' folder. First things first though — let's get SQL Compact installed.

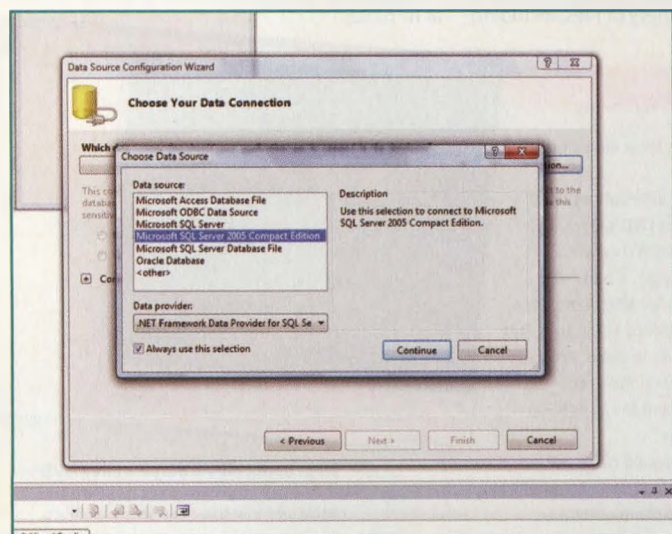
MINIMAL INSTALL

The install for SQL Compact is a small windows MSI file, holding everything you need. To do this, just double-click the downloaded file, follow the prompts and within a couple of minutes the relevant DLLs have been copied and GAC'ed. That's it. From now on, you can open, run and use the new database format. You should always consider that, in this version, it runs in process. This means that, unlike SQL Express, there is no service running in the background. SQL Compact's memory footprint is something like 5MB, which makes it ideal for compact devices.

If you have SQL Management studio, either the full or Express version, make a test database to check the install. Use the SQL Compact option and construct a small, one-table database. If you look at the location you specified, you can see that, like Access, the database consists of just one file. That's all you have to deploy, along with your applications too, making this a really simple product to use. OK, time for our image manager.

INITIAL VERSION

We won't step through the coding of the whole application, since we have done some simple



Download Microsoft's SQL Compact SDK and you'll get much more desktop development support. And it's all free to use.

databinding in previous articles. Open up the ImagesDB — First Go project, and let's have a look at just the interesting parts. The application is simple; one form and one data table in the database. We used Visual Studio to construct the database and, when complete, dragged the typed dataset onto the form to give a DataGridView control. Excluding the primary key, we have only four columns in the Images table, with one being of data type Image. This is where we will put our thumbnails with the code.

In databinding, remember that there are a couple of annoyances that need coding around. Closing the form does not automatically save changes, for instance; have a look at the code in the Load and FormClosing events to see our solutions. Also of note is the small amount of code needed to search all the directories and files below the chosen starting directory. With just the one line, we recursively search everything below the FolderBrowserDialog1.

```

SelectedPath.For Each Filename As String In
My.Computer.FileSystem.GetFiles(FolderBrowser
Dialog1.SelectedPath, FileIO.SearchOption.
SearchAllSubDirectories, wildcards)

```

Now, how to create a thumbnail from every type of image we encounter? This is surprisingly easy.

```

Img = New Bitmap(Filename)
thumb = Img.GetThumbnailImage(100, 100,
Nothing, New IntPtr())
thumb.Save(MemStream, System.Drawing.
Imaging.ImageFormat.Bmp)
NewRow.Thumbnail = MemStream.ToArray()

```

First, we make a new bitmap from the image file we found on the disc. After this, we need to call the GetThumbnailImage method, and use the resulting image to give us a byte array via a call to the memory stream's ToArray method.

Run this project, and you can see that, thanks to databinding in .NET, we have a fully functioning image database. The line DataGridView shows us the image thumbnail, which is just what we need to jog our memory whilst clearing up our hard drives. However, there is a problem. Run the project and pick the Windows directory to scan. Pretty soon, up comes an unwanted UnauthorizedAccessExcepti on as we try to look inside one of the Windows system folders. So, we have a dilemma. We need to catch this specific exception and somehow carry on scanning the rest of the folders for images.

IMAGE DATABASE MK 2

The way we search for files at the moment means we can't easily wrap the 'for each' loop in a try/ catch block and still carry on the search. What we need is to split up the searching into two halves: one to search for directories and one to catalogue the image files. We can then wrap the directory searching function in a try/catch block, like this:



Never lose a photo again with this simple image manager.

```

For Each currentDir As String In Directory.
GetDirectories(StartDir)
Try
SearchDirs(currentDir)
Catch ex As UnauthorizedAccessException
End Try
Next

```

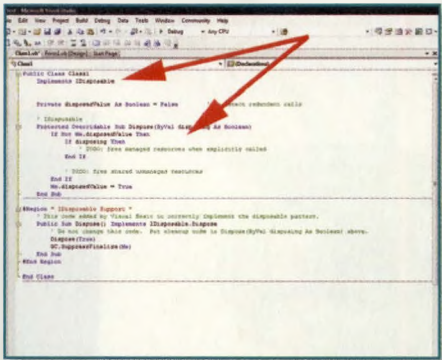
Open up the project called ImagesDB — 2nd Go. In keeping with good practice, and also to investigate the SQL Compact database in general, we have split off the database access to a separate class in the ImagesDA.vb file. As we were hoping, connecting to the database is exactly like all the other SQL Servers. Having got a connection to the database file, we just use the ExecuteNonQuery method of a command object. Use the following code to carry out this action yourself:

```

Using cmd As New SqlCeCommand()
cmd.Connection = conn
cmd.CommandType = CommandType.Text
cmd.CommandText = "Insert into
Images (Name, FullPath, Thumbnail, Notes)
values (@Name, @FullPath, @Thumbnail,
@Notes)"
cmd.Parameters.
AddWithValue("@Name", Name)
cmd.Parameters.AddWithValue("@F ullpath",
FilePath)
cmd.Parameters.AddWithValue("@T humbnail",
Thumbnail)
cmd.Parameters.
AddWithValue("@Notes", Notes)
cmd.ExecuteNonQuery()
End Using

```

As you can see, we could upgrade this to SQL Express or higher with no changes at all. That is a big inducement to use SQL Compact in our view. So, we have finished our little data-



This is so easy to use: inherit the IDisposable interface and the IDE writes all this code for us.

based project, having successfully eliminated the access exceptions. Well, not quite. Run the 2nd Go project a couple of times with large directories of images, and you can see the new problem. Regular readers will recognise the fact that we have put all the processing in the UI, (user interface), code. Vista does a much better job of keeping the form looking acceptable in these circumstances, as our screen shot shows, but this is still really bad programming. We think we should call on a BackgroundWorker thread.

Using a BackgroundWorker thread is the ideal way to remove heavy duty processing from the UI. It also gives us the additional benefit of being able to cancel the operation if we wish. Also, using the ProgressChanged event of the thread means we can power a ProgressBar component to give some useful feedback to the user.

Open up the ImagesDB project to examine the changes we made to get all this working for you. Then, you could try taking the project for a test drive. We can cancel the thread if we want to: this will minimise and move the form whilst the image scanning is going on, and we get the progress bar to indicate that something is going on in the background.

The quick look at SQL Compact this month has definitely convinced us to take this new offering seriously, for both hobby and commercial projects.

HANDY TIP

We can use our own classes in the 'Using' construct, but they should implement the IDisposable interface. In your classes, get the database connection back in the connection pool, as the inherited IDisposable interface will let you do that. This helps if they use any form of unmanaged resources, such as Windows handles. With VB.NET, the IDE will auto-complete using the correct template when we want to inherit IDisposable. Add a new class to a test project, and 'IDisposable' on the line after the class definition. Press return and the correct code is added to the class.



downtime

HIGH PERFORMANCE PLAYTIME

GEAR

GAMES

CHIP CHAT



Test Tube Aliens

If last month's Nabaztag didn't float your boat, then perhaps a desktop buddy like the Alien is more your style. This little critter starts off small and grows — the trick is to keep it alive with tender-loving Alien care. It's web-enabled too, so you can perform periodic health checks. Hold the tube up to your screen and the Alien's light will flash, giving you a status on how it's feeling. The test tube liquid creeps us out a bit though, and we don't even want to know what would happen if we tried taking this thing through customs.



Napoleon Dynamite Pen

If the geeks inherit the Earth, Downtime HQ's vote for supreme leader would go to Napoleon. What other mortal has the bravery to electrocute himself in the name of time travel, wear boondoggles as a fashion item and — most importantly — stand up for the underdog (in this case, the Loch Ness Monster)? This pen is pretty sweet, and has a few choice words of advice from Napoleon that will crack you up and possibly creep out anyone nearby. Better than getting hit in the face by a flying piece of steak.

Sanyo CP29YS2

Can't afford a shiny new LCD television? Sanyo's slimline CRT TVs look sort of like an LCD (from the front anyway), and they're a lot cheaper. This 68cm stereo model has 20% less depth than normal CRTs and comes with component inputs and front and rear AV inputs. If anyone asks you why the back is bulky, just say it's a new laser processing unit for richer colour. Also, the company has made the brilliant connection between buying televisions and caring for the environment with the slogan "Think GAIA, for Life and the Earth".

Corsair Survivor USB 2.0 Drive

This USB drive is apparently water-resistant to 200 metres; good to know in case you're ever scuba diving or it falls in the deep end at a pool party. Also handy is the anti-shock protection and the anodised aircraft-grade aluminium casing — so hopefully this won't fall apart in our bag like our last USB drive. In case you're wondering, we've personally tested the structural integrity of the cylinder by throwing it from one end of our Lab to the other. We weren't game to drop it, but we can report it flies through the air like a dream.

.. CONTACT Imagine If
.. ONLINE www.imagineiftoys.com.au
.. PRICE \$24.99
.. VERDICT ★★★★★

.. CONTACT Faboo
.. ONLINE www.faboo.com.au
.. PRICE \$14.95
.. VERDICT ★★★★★

.. CONTACT Sanyo
.. ONLINE www.sanyo.com.au
.. PRICE \$399
.. VERDICT ★★★★★

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.. ONLINE www.altech.com.au
.. PRICE \$121 (4GB)
.. VERDICT ★★★★★

APC **UBER**

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APC **1337**

Very cool

APC **n00b**

Uncool



Parasound NewClassic D 200

You may not have heard of Parasound, but don't let that put you off — they're launching their first DVD player in Australia, and we like it. Why? Because the Parasound people aren't shy about throwing in some hardcore features when it comes to their little baby, the NewClassic D 200. There's the heavy duty powercord, the HDMI output and gold-plated 5.1 channel analog output jacks. Not to mention the Faroudja DCDI processing — it's been on our shopping list for ages. This is truly a home entertainment machine that means business.

iAXE629 USB-Guitar

These days guitars and computers go hand-in-hand — like this Behringer USB guitar which plugs straight into your PC so you can record and add effects. So what is this technology offering? Well, for one, you're promised the distorted guitar tone of rock from the 60s and 70s. The software also lets you jam to MP3s, WAVs or backing tracks. Plus there's a metronome for learners. Interestingly the manual says the sound quality may diminish within range of "powerful broadcasting stations". So don't rock out on a cliff near a tv antenna.

Sony VAIO VGF-WA1

When we're listening to the latest Colbert report, we need to know we won't miss a word if we pop into another room. That's where this black box comes in — it streams music from your PC so you can hear it wherever you go. It works with iTunes and Windows Media Player and is compatible with WMA, MP3 and AAC music files. You can also stick some batteries in it and load music so you can take it outside. It only has 128MB memory — so maybe not enough for a whole evening's entertainment, but it'll do.

Belkin TuneTalk Stereo

You're at home humming a few tunes, and suddenly you think: "To heck with it, Def Leppard's *Hysteria* has nothing on this, I'm getting this down on tape". But what to record with? You could build yourself an egg-carton-lined basement studio, complete with rack-mounts of equipment. If you don't have oodles of space and time, then this gizmo will give you basic 'CD quality' recordings by attaching to the base of your iPod video. Better still, you can take it with you to the bathroom, where old-school musos know that the acoustics are best.

CONTACT Network Audio Visual
ONLINE www.networkav.com.au
PRICE \$2,495
VERDICT ★★★★★☆

CONTACT Behringer
ONLINE www.behringer.com.au
PRICE \$299
VERDICT ★★★★★☆

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PRICE \$499
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ONLINE www.apple.com.au
PRICE \$99
VERDICT ★★★★★☆



Shadowrun

Nick Race discovers resurrection, dwarves and sniper rifles.

Shadowrun is an answer to quite a big question: can there be a successfully implemented cross-platform game, that both platform users would actually play? It met that goal, enabling Xbox 360 users and PC users to game online side by side... but it's still not worth the price of admission.

The Shadowrun mythos has been around since the late 1980s as a role-playing game set in the mid-21st century. The basic premise is that magic has returned to earth, and giant corporations are beginning to really run the show. Mix with that a penchant for the human genome to mutate and you've got a messed-up, violent world.

The PC and Xbox 360 take on this is an FPS shooter. What sets it apart is the use of magic with the technology of guns and bombs, allowing you to heal other players, resurrect them when they die, fly, float or teleport around the maps and create obstacles for the enemy to encounter. The game lets you play as a human, elf, dwarf or troll, with different strengths and weaknesses in technology or magic.

Spread over nine different maps, the game is online multiplayer only, with bots taking the place of other players in offline training maps. Primarily the game is capture the artefact, either attacking and stealing, or defending a 'magic artefact' from the other side.

The game is round-based, just like Counter-Strike, so expect to sit out the occasional round after an early death. Also like CS, you purchase your weapons and magic when the game round begins, with money being earned for kills along the way.

The weapons feel pretty uninspired, with the basic SMG feeling almost powerless, pistols like popcaps and the much-vaunted katana (in third-person view) like swinging a breadknife. Add to that the speediness of magic users, 'smoke form' which makes people immune to bullets, or the pure tank-like damage soaking of the trolls and frustration abounds.

Magic does add a swathe of new tactics to a tired genre, with the resurrection skill bringing other



players back to life, but only as long as you live, turning into impromptu games of protect the VIP. Teleporting and gliding allows real hit-and-run attacks, provided you can muster enough people for the firepower and convince them to play along.

Playing with Xbox 360 users makes an interesting change also. The different styles between console and PC gamers are apparent, and learning to exploit their slow turning when armed with a mouse can get you some kills — but be aware their better control when wielding swords (and assisted aiming with guns) can get you popped off just as easily.

The new additions to the standard FPS fare are welcome, as is playing with the Xbox crowd. After all, more people to play against can't be a bad thing. The polish wears off Shadowrun quickly, however. After a few hours, the game feels even more contrived than the usual Half-Life 2 mod: the maps are samey and limited, and frustrations from underpowered weapons and overpowered magic cheapen both schools.

Though it was a valiant effort, and a good proof of concept between spheres of gaming, Shadowrun itself is far from a must-have. If you're curious and have \$70 burning a hole in your pocket, then take a look. If you're not urging with desire to shoot elves in a back alley in Brazil, then give it a miss.



▲ "Oh yeah? Well, 'proof of concept' this!"



▲ "Ah, shooting elves in a back alley. Nothing like it. Except all those other games."



▲ "It's an Xbox player! Quick, kill it!"

The Darkness

Troy Coleman catches fire, dials 1.

You play the mob hit-man Jackie Estacado, and it's your 21st birthday. What better way to celebrate than collecting money from crooked cops. But the deal goes awry, and you find yourself the sole survivor of a car crash in a construction site and the target of a mob hit. Soon after, Jackie is chosen (possessed) by the Darkness, a physical manifestation of chaos. Possession and power come with perks, and what could be better than snake heads tearing from your scapula ready for you to command. You can increase your powers by devouring the hearts of your prey. The snakes also allow you to slither through tight spaces like vents to access other areas. Minions named Darklings which look somewhat like the bad Gremlins can be summoned to do your bidding with several different roles available: the Kamikaze, essentially a suicide-bomber; Gunner, Gatling gun in tow; Berserker, a vicious creature and the Light Killer, er, killer of light.

Not quite open-ended and not quite linear, *The Darkness* has blended 'comic' cinema action with a rich and visceral first-person gaming experience. Deep and engaging, the plot keeps you wanting more. New York City is dark, gritty and really feels like it's dangerous for you to be out at night. Texture detailing is fantastic and most environments are somewhat destructible. Public transport is the best way to get around the city: the trains are always on time in New York, and no-one needs to buy tickets. Information is learned from friends you meet on the street or phoning a friend. Random phone numbers can be found on scraps of paper and around the environments, and calling these can unlock bonus content.

The character voice work is phenomenal, with celebrity chords provided by Kirk Acevedo (Band of Brothers), Lauren Ambrose (Six Feet Under) and Mike Patton (Faith No More). Just be sure to dial 555 5664.

"Happy birthday to me!
I'm a hideous freak!"



CONTACT	2K
ONLINE	www.2kgames.com
PRICE	\$109.95
PLATFORM	XBOX 360
✓	Engaging plot; great graphics.
✗	Sound syncing is off.
VERDICT	★★★★☆



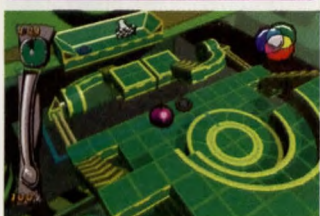
CONTACT QVS
ONLINE www.qvsoftware.com.au
PRICE \$99.95

PLATFORM Wii

✓ Great tilt sensitivity and puzzles.

✗ Repetitive feel to later levels.

VERDICT ★★★★★



Mercury Meltdown Revolution

Peter Dockrill oozes blob appeal. Yes, you read that right.

When a game is touted as featuring "state of the art blob physics", you just know you better stand up and pay attention. And, while this reviewer can't claim to possess any special knowledge of that particular field, we can say that *Mercury Meltdown Revolution* is a lot of fun.

First released on the PlayStation Portable, the *Mercury Meltdown* series sees you tilting and angling a string of maze-like 3D arenas as you aim to guide your malleable, mercurial blob to the exit in each level. Each arena takes the form of a platform floating in space, and, if your balance or timing is off, your blob can fall (or be pushed off, or zapped, or chopped up etc.) into

nothingness. The game model is nothing particularly new: while reminiscent of the relatively recent and more arcadey *Super Monkey Ball* series, the basic ideas date back even further to the old-school classic, *Marble Madness*.

But what sets *Mercury Meltdown* apart from its forefathers is that the series is much more puzzle-oriented, and the sense of physics and gravity is much more refined — it just feels right. Plus, this time around, you control not a ball but a fluid, spherical blob. It slurps around realistically and can be split up into smaller divisions of itself (think T-1000 from *Terminator 2*, but without the attitude). This

innovation significantly impacts on level and puzzle design, which has you mixing and matching differently coloured globules and so on.

Finally, this Wii rendition, *Revolution*, uniquely utilises the tilt sensor of the Wii Remote to captivating effect: you really feel like you're in complete control of that little blob's world. Graphics and sound are cartoony and fun (if not mind-blowing), and the difficulty ramps up steeply after the token introductory 'labs', so, with over 150 levels (plus extras) to unlock, you'll be needing some steady nerves (and patience) in order to see your blob quest through to fruition.



chip chat



by Peter Dockrill

The TWILIGHT'S OWN

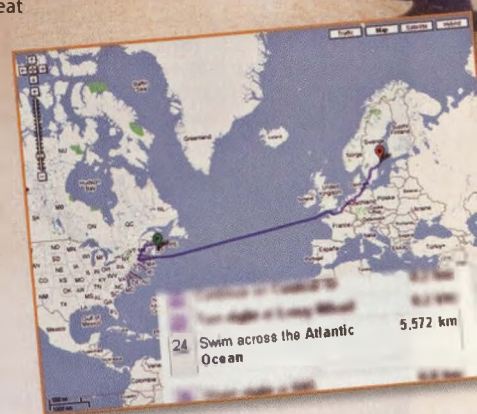
Here's one for the real conceptualists among you: online auction site and one-time eBay rival MightyBids.com recently auctioned itself off... on eBay. In a true case of life imitating e-commerce, the Montreal-based MightyBids, the brainchild of entrepreneurs Peter Michaud and Jeff Ramaglia, was placed on sale amidst much publicity on the very shelf of its primary competitor and foe. Said its founders, MightyBids was developed to provide "a stable, successful online auction service that let buyers and sellers escape the fees and annoyances of the other place [eBay]." Considering the project to have been a success, the pair were selling the business to move onto "other projects". However, at auction's end, 86 bids saw the top offer pushed to a heady US\$97,601, though this amount did not meet the seller's reserve price. Better luck next time, guys.



Fancy a dip?

You could be forgiven for thinking, in light of all the world-changing, zeitgeist-inducing application revolutions which Google has unleashed upon us in recent years, that the company may have forgotten its sense of humour. Sure, Google's offerings might all carry a certain gee-that's-neat-and-free-too bonhomie, but they never pack much punchline: Google Earth inspires occasional awe, not laughter; Google Docs & Spreadsheets offers cool Web 2.0 office functionality, but it's still, uh, a Docs & Spreadsheets app. So it's nice to see that, while they're busy transforming life as we know it, Google hasn't entirely stopped seeing the funny side of things. As reported earlier this year by the Gadling.com travel blog, the initial

build of Google Maps' driving directions service contained a hidden little Easter Egg. Great bodies of international waters notwithstanding, when asked for directions between continents, Maps would happily plot a course from your starting-out point across oceans and seas to your destination. As these pics show, upon reaching the watery edge of continent A, you might see 'directions' a little something like this towards land-mass B: "Swim across the Atlantic Ocean — 5,572km". This little hiccup has now, regrettably, been ironed out — but don't let that stop your next roadtrip becoming your most ambitious to date!



The Atlantic Ocean: don't let it get in the way of your next Sunday outing...

Jim enjoys moonlit strolls on the beach... and data throughput



Move over RSVP.com, there's a new web dating service in town... we think. Or perhaps, to put it another way: when is a wireless broadband promo site not a wireless broadband promo site? A: When it's a new-age, ego-stroking, self-discovery lovefest. Confused? So were we. But head on over to www.nextg.com.au and, before you can uncover any solid info on what this next-gen wireless gaffe is all about, you'll be wrestling with curly ones like this:

Question 4. Which best describes you?

- I love freedom and independence.
- I want an exciting life that is stimulating.
- My friends' opinions are important to me.
- My main aim in life is to be a good parent and provide for my family.
- Life is about having fun and enjoying myself.

Welcome to the Next G 'experience customiser' (read: flashy welcome screen prompting for personal information in a touchy-feely manner; dressed up as a fun questionnaire, but actually a thinly veiled attempt to figure out how to best flog Next G to you). But regardless of whether you personally opt for 'Comfort and prosperity' over 'Happiness and inner peace', the path to that which you seek is still likely to resemble an \$80 per month i-mate JasJam contract over 24 months. Now come here, give me a hug, and let's talk about us. **apc**

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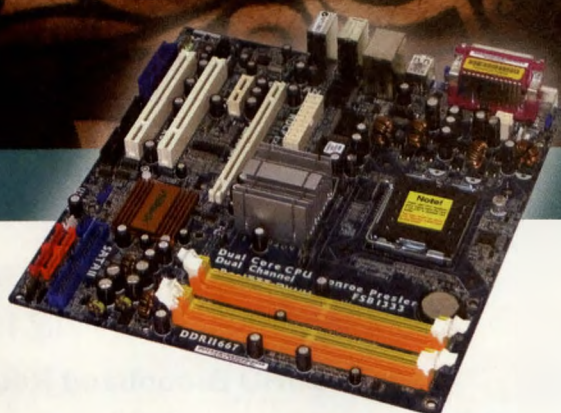
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- 3.5" HDD is not included

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- 3.5" HDD is not included



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- Supports USB 2.0 slave port
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- Supports composite, S-video, component video outputs
- Supports Dolby digital, MP1 and MP2 Layers I, II and III (MP3), WMA
- Supports stereo L/R, optical/coaxial digital audio, analogue 5.1 channels
- 2.5" HDD is not included



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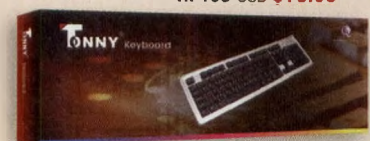


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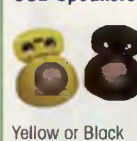
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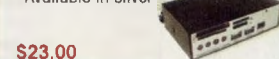
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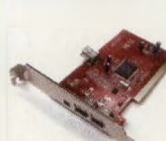
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Model	Genuine	TONNY
BX-3	\$49.00	\$28.00
BC-02	\$39.00	\$28.00
BC-03	\$38.00	\$28.00
BC-05	\$50.00	\$30.00
BC-20	\$49.00	\$28.00
BCI-3eBK	\$25.00	\$ 8.80

Model	Genuine	TONNY
BCI-3eC/M/Y	\$19.00	\$6.40
BCI-6BK	\$24.00	\$6.40
BCI-6C/M/Y	\$24.00	\$6.40
BCI-6G	\$24.00	\$6.40
BCI-6R	\$24.00	\$6.40
BCI-6PC/PM	\$24.00	\$6.40

Model	Genuine	TONNY
BCI-15BK	\$24.00	\$6.40
BCI-15C	\$44.00	\$7.20
BCI-16C	\$44.00	\$7.20
BCI-21BK	\$13.00	\$4.90
BCI-21C	\$28.00	\$6.40

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Model	Genuine	TONNY
PGI-5BK	\$22.50	\$8.50
CLI-8BK	\$22.50	\$8.50
CLI-8C/M/Y	\$22.50	\$8.50
CLI-8PC	\$22.50	\$8.50
CLI-8PM	\$22.50	\$8.50

Epson Ink Cartridges

Model	TONNY
T001	\$18.90
T003	\$ 9.90
T005	\$18.00
T007	\$ 9.30
T008	\$13.00
T009	\$15.00
T013	\$ 4.50
T014	\$ 7.90
T017	\$ 9.70
T018	\$10.60
T026	\$ 9.70
T027	\$12.40
T028	\$ 9.70
T029	\$10.60
T038	\$ 9.60

Model	TONNY
T039	\$10.60
T0321	\$10.80
T0322	\$ 7.50
T0323	\$ 7.50
T0324	\$ 7.50
T0422C/M/Y	\$ 9.50
T0461	\$ 8.90
T0472/3/4	\$ 8.90
T0491/2/3	\$ 8.90
T0494/5/6	\$ 8.90
T0540/1/2	\$ 8.90
T0541/2/3/4	\$ 8.90
T0547/8/9	\$ 8.90
T0561/2/3/4	\$ 8.90
T5591/2/3	\$ 8.90

HP Ink Cartridges

Model	Genuine	TONNY
51625A (#25)	\$46.00	\$28.00
51626A (#26)	\$46.00	\$28.00
51629A (#29)	\$46.00	\$28.00
51633MA (#33)	\$41.00	\$32.00
51645A (#45)	\$46.00	\$16.00
51649A (#49)	\$48.00	\$28.00
C1823D (#23)	\$51.00	\$30.00
C4841/2/3/4AA (#10)	\$46.00	\$14.00
C4836/7/8A (#11)	\$48.00	\$14.00
C5010DA (#14)	\$47.00	\$26.00
C5011DA (#14)	\$35.00	\$24.00
C6578D (#78)	\$51.00	\$30.00
C6614A (#20)	\$44.00	\$24.00
C6615DA (#15)	\$44.00	\$24.00

Model	Genuine	TONNY
C6625A (#17)	\$48.00	\$30.00
C6656AA (#56)	\$32.00	\$18.00
C6657AA (#57)	\$51.00	\$32.00
C6658AA (#58)	\$37.00	\$26.00
C8727A (#27)	\$31.00	\$24.00
C8728AA (#28)	\$35.00	\$26.00
C8765WA (#94)	\$31.00	\$27.00
C8767WA (#96)	\$42.00	\$29.00
C9363WA (#97)	\$45.00	\$32.00
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C8774/5WA (#02)	\$16.00	\$10.00
C9351AA (#21)	\$24.00	\$21.00
C9352AA (#22)	\$27.00	\$23.00

Brother Ink Cartridges

Model	Genuine	TONNY
LC-21BK	\$30.00	\$7.90
LC-21C/M/Y	\$17.00	\$7.50
LC-02BK	\$21.00	\$7.90
LC-02C/M/Y	\$11.00	\$7.50
LC-04BK	\$28.00	\$7.90
LC-04C/M/Y	\$16.00	\$7.50
LC-47BK	\$32.00	\$7.90
LC-47C/M/Y	\$18.50	\$7.50



Lexmark Ink Cartridges

Model	Genuine	TONNY
12A1970	\$48.00	\$32.00
12A1980	\$56.00	\$35.00
17G0050	\$46.00	\$32.00
17G0060	\$53.00	\$35.00
13400HC	\$53.00	\$36.00
13619HC	\$52.00	\$38.00
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Samsung Ink Cartridges

Model	Genuine	TONNY
M40	\$59.00	\$23.00

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Model	Genuine	TONNY
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C3906A/F	\$ 95.00	\$ 49.00
C3903A	\$120.00	\$ 59.00
C3909A	\$220.00	\$ 95.00
C4092A	\$ 87.00	\$ 49.00
C4096A	\$135.00	\$ 65.00
C4127A	\$145.00	\$ 65.00
C4127X	\$169.00	\$ 80.00
C4129X	\$210.00	\$ 95.00
C4182X	\$239.00	\$135.00
C7115A	\$ 89.00	\$ 49.00
C7115X	\$115.00	\$ 65.00

Model	Genuine	TONNY
C8061X	\$165.00	\$ 85.00
Q1338A	\$189.00	\$ 95.00
Q2612A	\$ 95.00	\$ 59.00
Q2613A	\$ 95.00	\$ 59.00
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HP LJ4600	C9720A (BK)	\$199.00	\$155.00
	C9721/2/3A (CYM)	\$262.00	\$185.00
HP LJ4500, Canon LBP2460/2040	C4191A (BK)	\$119.00	\$ 59.00
	C4192/3/4A (CMY)	\$165.00	\$ 69.00
HP LJ8000	C4149A (BK)	\$150.00	\$ 89.00
	C4150/1/2A (CMY)	\$225.00	\$155.00
Epson C900/1900	S050100 (BK)	\$ 99.00	\$ 79.00
	S050097/98/99 (CMY)	\$210.00	\$119.00
Epson C1000/C2000	S050033 (BK)	\$119.00	\$ 90.00
	S050034/5/6 (CMY)	\$249.00	\$119.00

Samsung Toner

Model	Genuine	TONNY
ML-1210D3	\$ 94.00	\$ 59.00
ML-1650D8	\$185.00	\$105.00
ML-1710D3	\$ 98.00	\$ 59.00
ML-2010	\$103.00	\$ 59.00
ML-2150D8	\$185.00	\$140.00
ML-4100D3	\$ 99.00	\$ 83.00
ML-4500D3	\$119.00	\$ 73.00
ML-6060D6	\$155.00	\$ 93.00
SCX-4216D3	\$ 99.00	\$ 59.00
SCX-5312D6	\$ 95.00	\$ 79.00
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Brother Toner Cartridges

Model	Genuine	TONNY
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TN-200	\$ 42.00	\$23.00
TN-2025	\$ 74.00	\$59.00
TN-300	\$ 42.00	\$23.00
TN-3060	\$125.00	\$65.00
TN-8000	\$ 43.00	\$23.00
TN-6600	\$ 99.00	\$65.00
TN-7600	\$125.00	\$65.00

Canon Toner Cartridges

Model	Genuine	TONNY
E-31	\$189.00	\$85.00
EP-22	\$ 99.00	\$49.00
EP-25	\$ 99.00	\$49.00
EP-26	\$109.00	\$69.00
EP-32	\$145.00	\$65.00
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FX-3	\$132.00	\$59.00
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CART-N	\$220.00	\$76.00
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Model	Genuine	TONNY
EPL-5700	\$190.00	\$49.00
EPL-5900	\$205.00	\$49.00
EPL-6200	\$215.00	\$49.00

Lexmark Toner Cartridges

Model	Genuine	TONNY
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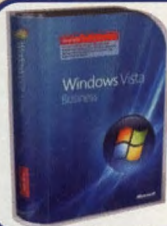
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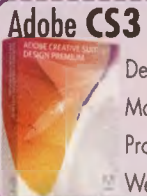


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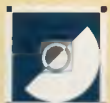
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CRU3 is designed to connect to any PABX, COMMANDER, PSTN or VOIP handset. Will then provide High Quality telephone call recording to your PC (PC software provided). Automatic operation with start/stop activation from your PC.



PROFESSIONAL model

CRU4 provides all facilities of the CRU2 Model (it connects to any handset) and in addition allows message(s), or previous recordings to be played back to the other party at any time. Allows notes to be tagged to the recording file.



AUTO DIGITAL ANNOUNCEMENT

Our AUTOMATIC ANNOUNCEMENT DEVICE will Answer your incoming telephone calls, play an announcement and then resume ringing of your telephones. Ideal for announcing change of number or that the call will be recorded.



TELEPHONE LINE DOOR STATION SOLUTIONS

DOOR STATION UNIT

DS2 will RING all of your telephones when a visitor arrives at your front door or gate. Answer to communicate. Open the door or gate with touch tones. Operates on any ordinary single line or multi-line phone system. Requires surface mount or flush mount door phone.



PABX DOOR STATION UNIT

DS4 is designed to be connected to an analogue extension of any PABX, Commander or other multi line telephone system. DS4 goes "off hook" when activated by the door phone. Requires surface mount or flush mount door phone.



DOOR STATION DIAL OUT

Our New DS6 model will RING your telephones and then DIAL OUT to a pre-programmed telephone number if a visitor arrives and you are not home. Requires Surface Mount or Flush Mount Door Phone. Can also connect to a PABX extension.



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FAX SWITCH will allow your existing Fax Device to connect to any Single Telephone line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Fax operation. Will operate with all existing telephones and also an Answering machine.



INTELLIGENT MODEMSWITCH

MODEM SWITCH allows your existing Data Modem Device to connect to any Single Telephone Line, Fax Line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Dial In & Dial Out Modem Data operation. Models available that allow up to 8 devices on 1 line.



EFTPOS SWITCH

EFTPOS switch will allow your existing EFTPOS device to share any existing Single Telephone Line, Fax Line or a Multi Line (PABX) phone system. Provides automatic connection on dialing BARGE-IN protection prevents interference when line is in use. Alternative model will allow operation on 2 lines.



MISCELLANEOUS TELEPHONE LINE APPLICATIONS

VOIP SELECTOR

This device will allow you to connect one or more telephones to your TELEPHONE LINE and VOIP LINE. Incoming calls from either line ring on the connected telephone(s). Outgoing calls are automatically DEFAULTED to ONE LINE, but the alternative line can be selected by DTMF code.



TWO LINE SELECTOR

Premium device will allow you to connect one Telephone Device to two Telephone lines (Telstra, Optus, VOIP, PABX etc). Ideal for EFTPOS, Cordless Phones, Modems etc. Additional features are provided, including automatic (or manual) selection of an alternative line if the default line is busy.



TELEPHONE CALL TRANSFER

Easy-Transfer will allow you to answer a call on one telephone and then TRANSFER the call to another telephone fitted to the same line. Also provides INTERCOM facility. Use your existing telephones.



MULTIPLE NUMBER SWITCH

Operate Two numbers on one line. This device will connect your Multiple number calls to one set of phones or answering machine and your Normal number calls to another set of phones or answering machine.



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MORE MISCELLANEOUS EQUIPMENT

TELEPHONE LINE SIMULATOR

This TELEPHONE LINE SIMULATOR can be used for testing, programming & demonstration of analogue telecommunications equipment, without the need to use a telephone line and generating costly calls. 4 Models are available.



RING INDICATOR

This device detects incoming calls and will close/open a relay to match the cadence of the incoming ring. Can also be set to close a relay until a call is answered. Ideal for control of external horns or lights to advise of an incoming telephone call.



REMOTE TELEPHONE ACTIVATOR

Call in to Switch ON, Switch OFF or RESET your PC, SERVER or any electrical equipment by telephone line using touch tone commands. RTA connects to any telephone line. Requires PCU accessory. 3 models are available.



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PCU connects direct to the RTA and also to your power socket to allow telephone line dial in switching of the 240V supply connected to your equipment. Easy Plug In User Installation. Controls up to 10 Amps.



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TDU will play 1 or more pre-recorded messages as soon as it is triggered by a movement sensor, a switch, or at a preset time interval. Ideal for Product Promotions, Product Information, Message Warnings etc.



MULTIPLE INPUT UNIT

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USB VGA Adapter

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Macro Keypad

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Cat 23052-1 \$379



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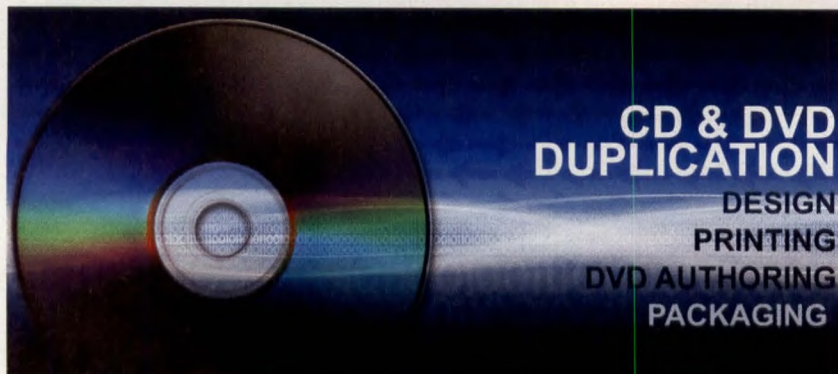
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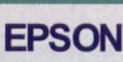
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Print Live is a first in the Australian market! A wide mix of USB, network and wireless printers connected to a central PC are now on live demonstration at your local Harris Technology Business Centre, including A4 & A3 inkjet, mono and colour lasers, to inkjet and laser multi-functions.

We can demonstrate wireless connectivity, duplex (dual sided) printing, scan to USB storage device, automatic document feeders and printing from memory card. To test drive the latest in printing technology from Brother, Samsung, HP, Canon and Epson, simply bring in your own USB key or memory card and test print your documents and images to the printers of your choice.



liveprintdemo  brother  Canon  EPSON  hp  SAMSUNG 

ONLINE ONLY OFFERS

10% off any
Microsoft Windows Vista[®]



ONLINE ONLY

10% off any
Mice & Keyboards



ONLINE ONLY

10% off any
Webcams & Headsets



ONLINE ONLY

[®]Retail boxed products only. Excludes OEM and open license products. Online Only Offers available online only between 01/08/07 and 31/08/07. Delivery charges may apply. Not available in conjunction with any other offer. Not available in Business Centres or via phone. No further discounts available. Only while stocks last. Limited supply per customer [except SA]. Offer subject to Harris Technology's Returns Policy and Terms & Conditions of purchase.

INTRODUCING THE ACER BUILD YOUR OWN PC PROGRAM

Harris Technology is excited to announce the Acer Build Your Own PC program. The Build Your Own PC program is a powerful new addition to the Harris Technology website that will enable you to custom build an Acer desktop PC. Simply choose any eligible Acer PC from our extensive range and then select the components that you would like to upgrade from an easy to use drop down list. Whether you are looking for a powerful cutting edge workstation with enhanced graphics or a basic low cost business PC, Acer can build it for you.

Harris Technology can deliver a custom built Acer PC to your door within 5 - 10 days, or you can pick it up from the Harris Technology store of your choice.

Why not give it a try today, simply click on the Acer BYO banner located on the front page of the Harris Technology website.



CUSTOMISE YOUR ACER COMPUTER

Select from the options below to build your Acer desktop. When you have finished your selection, please click Add to Cart

Veriton 1000

SUB-TOTAL \$1453.64

PLATFORM

☒ 1/1000 Standard Style

- * Intel® C295 chipset
- * Intel® Graphics Media Accelerator 3000
- * Intel® GMA 3000 is optimized for Windows® Vista Aero
- * 1 x VGA, 1 x DVI, 8 x USB 2.0

UPDATE PRICE

ADD TO CART

OPERATING SYSTEM

☒ Genuine Windows® XP Home

(+ \$70.00)

☐ Genuine Windows® XP Professional

(+ \$70.00)

☐ Genuine Windows Vista™ Business Edition

(+ \$70.00)

CPU

☒ Intel® Core 2 Duo® Processor E6300 (1.86GHz 3MB L2 cache 1066MHz FSB)

MEMORY 1

☒ 1024MB DDR2-SODIMM 533MHz

MEMORY 2

☒ None

☐ 1024MB DDR2-SODIMM 533MHz

(+ \$200.00)

HARD DRIVE

☒ 80GB SATA 3.0Gb/s hard drive (7200 RPM)

☐ Genuine Windows® Office 2007 Home & Student Edition

(+ \$200.00)

☐ Genuine Windows® Office 2007 Basic Edition

(+ \$240.00)

☐ Genuine Windows® Office 2007 Small Business Edition

(+ \$390.00)

☐ Genuine Windows® Office 2007 Professional Edition

(+ \$470.00)

MONITOR

☒ None

☐ Acer AL1716S LCD Monitor Silver

(+ \$362.73)

☐ Acer AL1716B 17" LCD Monitor Black

(+ \$362.73)

☐ Acer AL1717BM 17" LCD Monitor Black

(+ \$362.73)

☐ Acer AL1716G 17" LCD Monitor GLASS

(+ \$390.00)

☐ Acer AL1816S 18" LCD Monitor

(+ \$362.73)

☐ Acer AL1817BM 18" LCD Monitor

(+ \$380.00)

☐ Acer AL1817ASMD 18" LCD Monitor

(+ \$408.18)

☐ Acer AL2016WD 20" Wide LCD Monitor Silver

(+ \$390.00)

☐ Acer AL2017SMD 20" Wide LCD Monitor Silver

(+ \$493.94)

☐ Acer AL2216WD 22" Wide LCD Monitor Silver

(+ \$435.45)

☐ Acer AL2416WD 24" Wide LCD Monitor Silver

(+ \$1090.00)

Acer LCD and CRT monitors carry a standard 3 year limited on-site pickup warranty.

WARRANTY

☒ 3 Years Onsite

Repair service is available in Brisbane, Sydney, Melbourne, Perth, Canberra, Adelaide, Hobart, Auckland, Christchurch & Wellington.

Warranty applies to base unit and configured components (as above). Software and peripherals carry separate warranty conditions as per Terms and Conditions.

SUB-TOTAL \$1453.64

UPDATE PRICE

ADD TO CART

Phone 1300 13 9999 and get help now from a Customer Service representative

Notebooks

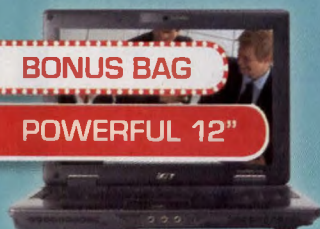
Great Notebook Offers...

GREAT BUNDLES!

Includes notebook, 19"
LCD Monitor, Dock,
Keyboard & Mouse

BONUS BAG

POWERFUL 12"



**12" WITH LATEST INTEL
CENTRINO CORE DUO
TECHNOLOGY**

TravelMate 6292 **acer**

- Intel Core 2 Duo T7300 2GHz
- 2 x 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **12.1" WXGA Widescreen**
- Intel GMA X3100 Graphics
- Integrated Acer CrystalEye Webcam
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Weighs 1.99kg
- Up to 3.5 hours of battery life
- Windows Vista Business
- 3 year warranty

\$2599 | U9055

RENT \$28.18/wk*

Also available with
Windows XP Professional | U9056

OR WITHOUT

the great bundle offer for:

\$2299 | U9052

RENT \$24.93/wk*

Also available with
Windows XP Professional | U9054

* Available capacity of hard drive
may be less due to preinstalled
software

¹ Cashback available from 01/08/07
to 31/08/07 or while stocks last,
via redemption from Acer. See
acer.ht.com.au for details. Terms,
Conditions & Postage charges apply

² \$150 Cashback via redemption
from Netgear
www.netgear.com.au/centrino.

Terms & conditions and postage
fees apply.

³ As compared to 802.11g
standard

* Refer to back page for
Rentsmart terms & conditions.

6710b

- Intel Core 2 Duo Processor T7300 2GHz
- 2 x 1GB DDR2 RAM (including bonus 1GB)
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15.4" WXGA Widescreen**
- Intel GMA X3100 Graphics
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Weighs 2.6kg
- Up to 4.25 hours of battery life
- Windows Vista Business
- 1 year warranty

\$1799 | RENT \$20.17/wk*

Windows Vista Business | U8811

Windows XP Professional | U8812



HUGE VALUE

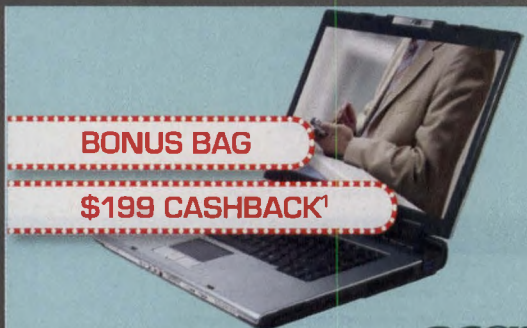
**BONUS 1GB RAM, BAG,
MOUSE & HUB**



Images for illustration purposes only.

BONUS BAG

\$199 CASHBACK¹



Extensa 4214WXM

- Intel Celeron M 440 1.8GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **14.1" WXGA Widescreen**
- Wireless LAN 802.11b/g
- Weighs 2.4kg
- Windows Vista Home Basic
- 1 year warranty

\$998 **\$799 AFTER
CASHBACK**
U8346 | RENT \$11.55/wk*

acer

nx6325

- AMD Turion 64 X2 TL-60 2GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- **15" XGA Screen**
- ATI Radeon Xpress 1150 with up to 128MB shared
- Wireless LAN 802.11b/g
- Weighs 2.7kg
- Up to 3 hours battery life
- Windows Vista Business
- 1 year warranty

LIMITED STOCK

\$1399
U5537 | RENT \$15.69/wk*

hp

BELKIN MOBILITY BUNDLE

This great Belkin Mobility Bundle is EXCLUSIVE
to Harris Technology
which represents
excellent value for
money and designed for
your mobility needs.

\$99 | U9353



BELKIN DESKTOP MOBILITY BUNDLE

Includes Koskin
Leather Bag,
Wireless Keyboard
& Mouse and
4 Port hub

\$149 | U9704



Reliable Business Computing...

ThinkPad R61

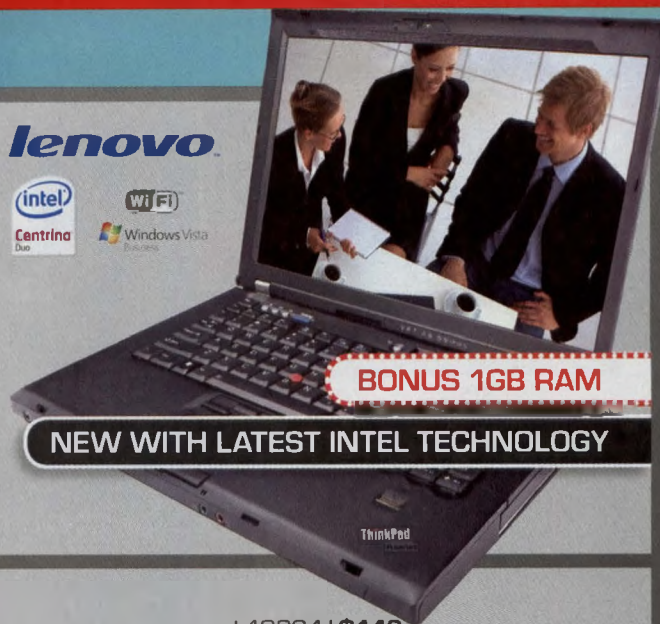
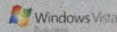
Lenovo R Series notebooks provide extraordinary performance and uncompromised quality for mainstream users who value the legendary ThinkPad reliability.

New R61 notebooks offer new features in 4 main areas: enhanced performance and reliability, security, improved connectivity, and multimedia.

- Intel Core 2 Duo Processor T7300 2GHz
- 2 x 1GB DDR2 RAM (Inc Bonus 1GB)
- 160GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- 15.4" WXGA Widescreen
- Intel GMA X3100 Graphics
- Wireless LAN 802.11a/g/n
- Bluetooth v2.0
- Up to 5 Hours of battery life
- Weighs 2.9kg
- Windows Vista Business
- 1 year warranty

\$1799 | RENT \$20.17/wk*
Windows Vista Business | U9654
Windows XP Professional | U9657

lenovo



BONUS 1GB RAM

NEW WITH LATEST INTEL TECHNOLOGY

PROMOTIONAL SPECIALS FOR THE THINKPAD R61 ONLY:

- OPTION 1 - SAVE \$214** - Lenovo 2 Year Extended Warranty | 49894 | **\$149**
OPTION 2 - GREAT VALUE - Lenovo 2 Year Extended Warranty + Accidental Damages Cover | U9909 | **\$199**
OPTION 3 - SAVE \$150 - Lenovo ThinkPad Mini Dock | T3723 | **\$149**

NEW

LATEST INTEL TECHNOLOGY

Tecra A9

TOSHIBA

- Intel Core 2 Duo T7100 1.8GHz
- 1GB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 15.4" WXGA Widescreen
- Wireless LAN 802.11a/g/n
- Weighs 2.9kg
- Up to 4 hours of battery life
- Windows XP Professional
- 1 year warranty

\$1979

U9698 | RENT \$22.19/wk*



BONUS MESSENGER BAG



VAIO FZ17G

SONY

- Intel Core 2 Duo T7300 2GHz
- 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 15.4" WXGA Widescreen
- nVidia GeForce Go 8400 with TurboCache
- Wireless LAN 802.11a/b/g & Bluetooth v2.0
- Weighs 2.7kg
- Windows Vista Home Premium
- 1 year warranty

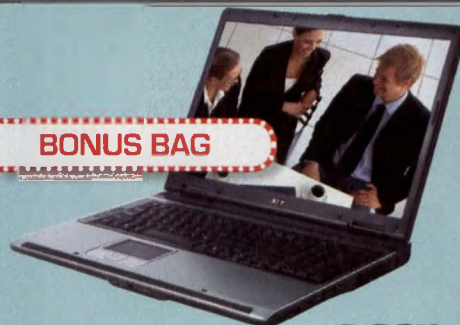
\$2499

U9072 | RENT \$27.10/wk*

Also Available:
VAIO FZ15G | U9070 | \$1999



BONUS BAG



TravelMate 5625WSMi

acer

- Intel Core 2 Duo T7200 2GHz
- 2 x 1GB DDR2 RAM
- 200GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 17" WXGA Widescreen
- nVidia GeForce Go 7300 with TurboCache
- Wireless LAN 802.11a/b/g & Bluetooth v2.0
- Integrated 1.3 megapixel Webcam
- Windows Vista Business
- 1 year warranty

\$2499

U8517 | RENT \$27.10/wk*

Also available with
Windows XP Professional | U8518



Wireless Speeding Allowed!

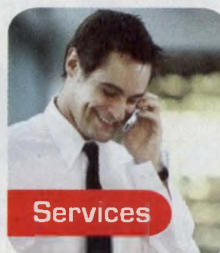
NETGEAR

Buy any Notebook with an Intel Core 2 Duo Processor and be eligible for a \$150 cashback² on a Netgear WNR834B Wireless Router with up to 5 TIMES FASTER³ draft 802.11n wireless technology.

\$239

| U9912
\$89 AFTER CASHBACK

\$150 CASHBACK²



Services

Book a Harris Technology professional to come On Site and install your Netgear wireless router so you can get on with running your business.

\$149 | U9916

Desktop & Display

Great value Desktop and Display offers...

225MS

SAMSUNG



NEW

HDMI READY

- Viewable Image: 22" Wide
- Interface: Analogue / Digital
- Resolution: 1680 x 1050
- Response Time: 5ms
- Contrast Ratio: 700:1
- Brightness: 300 nits
- Multimedia Speakers: 3Wx2ch
- HDTV ready
- Warranty: 3 years onsite exchange and zero dead pixel policy

\$749 U9494 | RENT \$8.66/wk*

VPL-EX4

SONY

3LCD

BONUS WIRELESS PRESENTATION TOOL



- 3LCD technology
- XGA resolution
- 2100 ANSI Lumens
- Macintosh® compatible
- Multiple inputs
- Password security and control panel lock
- Low power consumption (23 watts - 5 watts in standby mode)
- Quick start-up
- 2 years limited warranty

\$1749

U8285 | RENT \$19.61/wk*

* For terms and conditions, including RentSmart, see page 47.

1 Purchase Selected Toshiba projector until 30/08/07 and receive a Toshiba DVD Player and 84" projector screen via redemption directly from Toshiba. Visit toshiba.ht.com.au for redemption form and full terms and conditions. Postage charges may apply.

2 3 years part and labour quality assurance warranty with 90 day lamp & faulty product replacement.

3 Bonus Maxtor Drive available until 31/08/07 or while stocks last.

* Available capacity of hard drive may be less due to preinstalled software.



DX7300 SlimTower + 19" LCD

- Processor: Intel Core 2 Duo E4300 (Dual-Core)
- Memory: 1GB DDR II SDRAM -667 MHz
- Hard Drive : 80GB* SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD±RW LightScribe Technology
- Graphics: Integrated Intel Graphics Media Accelerator 3000
- Operating System: Microsoft Windows XP Professional
- Warranty: 1 year limited onsite



BONUS MAXTOR 160GB EXTERNAL HARD DRIVE³

\$1399

U9645 | RENT \$15.69/wk*

ALSO AVAILABLE: E6320 1GB 160GB DVD+/-RW XP PRO | \$1599 | U9646 | RENT \$17.93/wk*

AL2016WD

- Viewable Image: 20" Wide
- Interface: Analogue / Digital
- Resolution: 1680 x 1050
- Response Time: 8ms
- Contrast Ratio: 800:1
- Brightness: 300 nits
- Warranty: 3 years limited

\$329 | U4522

AL2216WD

- All of the above plus:
- Viewable Image: 22" Wide
 - Response Time: 5ms
 - Contrast Ratio: 700:1

\$455 | U4523



acer

HOT PRICE

J110 MicroTower + 19" LCD

- Processor: Intel Core 2 Duo E4300
- Memory: 1GB DDR2 SDRAM 533MHz (2x 512MB)
- Hard Drive: 250GB* SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD±RW
- Graphics: Integrated Intel Graphics Media Accelerator 3000
- Multi-card reader
- Warranty: 1 year limited onsite
- Samsung 940N Monitor included



\$1269

U9248 | RENT \$14.68/wk*

ALSO AVAILABLE: PD 925 512MB 80GB DVD+/-RW XP Pro & 19" LCD | \$1129 | U9236 | RENT \$13.06/wk*



lenovo

HT EXCLUSIVE

optional accessories



Western Digital Passport 160GB Portable Hard Drive
\$179 | U5600

Amicore 1GB DDR2 667MHz RAM
\$149 | U7702



Microsoft Natural Ergonomic Keyboard 4000 | \$79 | T0577

Ergotron DS100 Dual Monitor Stand
\$269 | A7590



BONUS TOSHIBA DVD PLAYER + 84" PULL-DOWN SCREEN¹

TOSHIBA

TDP-S35

- DLP Technology
- SVGA Resolution
- 2000 ANSI Lumens
- 2000:1 Contrast ratio
- Compact 3.0kg
- Integrated speaker
- Includes soft carry case and remote control
- 3 year warranty²



\$1249

T8918 | RENT \$14.45/wk*

TDP-T9

- DLP technology
- XGA resolution
- 2000 ANSI Lumens
- 2000:1 contrast ratio
- Weight: 2kgs
- Password security and control panel lock
- Includes soft carry case and remote control
- 3 year warranty²



\$1699

T6349 | RENT \$19.05/wk*

940BW

- Viewable Image: 19" Wide
- Interface: Analogue / Digital
- Resolution: 1440 x 900
- Response Time: 4ms
- Contrast Ratio: 500:1
- Brightness: 300 nits
- Wall mountable and height adjustable
- Warranty: 3 years onsite exchange and zero dead pixel policy



\$330

BLACK | U3759 | SILVER | U2943

AcerPower 1000 USFF

- Processor: AMD Athlon™ 64 X2 4000+ (Dual-Core)
- Memory: 2GB Dual Channel DDR2 SODIMM SDRAM 533MHz
- Hard Drive: 250GB* SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD+/-RW
- Graphics: Integrated nVidia® GeForce® 6150
- Operating System: Microsoft Windows® XP Professional
- Warranty: AcerPower 1 year standard onsite

acer



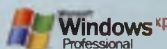
ONLY 2.6KGS

\$1299

U8095 | RENT \$15.03/wk*

ALSO AVAILABLE: AMD Ath X2 1GB 160GB# HDD | \$1099 | U4580 | RENT \$12.72/wk*

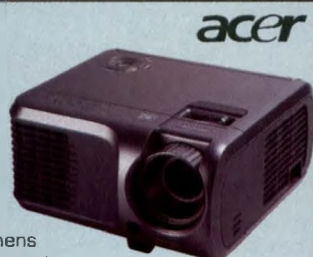
ALSO AVAILABLE: AMD Ath 3500+ 512MB 80GB# HDD | \$799 | U6904 | RENT \$9.24/wk*



SMALL & STYLISH

XD1270D

- DLP technology
- XGA resolution
- 2300 ANSI Lumens
- 2000:1 contrast ratio
- Weight: 2.2kgs
- Infrared movement detection technology
- Includes remote control
- Warranty: 3 years limited warranty



\$1399 U5061 | RENT \$15.69/wk*

206BW / 226BW

- The ultimate in performance
- Viewable Image: 20" / 22" Wide
- Interface: Analogue / Digital
- Resolution: 1680 x 1050
- Response Time: 2ms
- Contrast Ratio: 3000:1
- Brightness: 300 nits
- 3 year on site exchange and zero dead pixel policy



VISTA CERTIFIED

2MS RESPONSE TIME

\$449 | U5892 | 20"

\$649 | U5893 | 22" | RENT \$7.51/wk*

SAMSUNG



optional accessories

8GB Pocket Disk USB 2.0
\$149 | U7845



Microsoft Office Professional 2007
\$849 | U1830



Targus Desktop USB 2.0 7 Port Hub
\$69 | T9411



Toshiba 84" Projector Screen
\$389 | S9635



Adobe Acrobat 8.0 Professional - Win
\$675 | U1228



HP Officejet Pro K5400dtn Printer
\$379 | U7751

Phones & Networking

Keep in touch...

Treo 750



Handset features:

- Microsoft® Windows® Mobile 5 operating system
- Microsoft Office® Word, Excel®, PowerPoint® and PDF® Viewer
- Mobile access to multiple business and personal email accounts
- Full QWERTY keyboard
- Voice command for speed dialling or calendar access
- Built-in Bluetooth® wireless technology
- 1.3 megapixel digital video camera
- 128MB memory
- Windows Media® Player for music and video



BONUS BLUETOOTH HEADSET

Telstra Dealer

NEXT NETWORK

\$0 UPFRONT

on a \$80 Telstra Business Phone Plan over 24 months¹

OUTRIGHT PRICE **\$1199** | U7664

¹Minimum cost on the \$80 Telstra Business Mobile and FleetSelect Phone Plan is \$1,920 (for phone and service). Extra usage (incl. data & content) charges are additional. Early termination charges may apply. ABN required.

For terms and conditions see back page for details.

DSS7955+1 5.8GHz Cordless Ph/Ans Machine (2 Handsets)

Uniden
SOUNDS BETTER

- Premium 5.8GHz Digital Spread Spectrum Phone System
- Integrated Digital Answering Machine and Base Dial Keypad
- Multi [10] Handset Capable
- Wireless (WiFi) Network Friendly
- Optimum Digital Clarity and Security



NEW

\$219 | U9325

Xda Atom Life 3G Enabled Device

O₂

With a myriad list of multimedia capabilities and a sleek design, the O2 Xda Atom Life promises just about infinite possibilities for those who desire to get the most out of their lives. With the fastest-in-its-class processor, spacious storage and powerful multimedia tools, the Xda Atom Life ensures you are the master of work and play. The Xda Atom Life keeps you connected to everything that's important to you.



\$1275 | U5788

2 MONTHS FREE ENGINE SERVICE²

VoiceBox 3102

engin

- Have you got broadband?
- Want 10 cent phone calls Australia wide?
- Want the option to use your existing phone number?
- Have a home or office phone? This product allows you all of the above plus includes an in-built router should you need one



\$129 | U9016

Cordless DECT Dual Handset Pack

engin

The engin Internet Phone 121 is a new DECT cordless phone. It includes a built-in 1 port router, use of your existing phone number and supports up to 8 additional handsets.



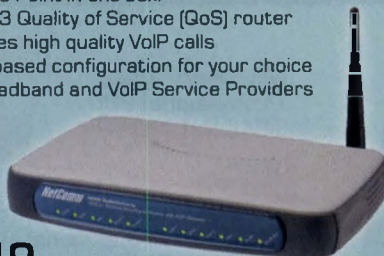
\$159 | U9017

² To call over Broadband with Engin, minimum 512Kbps broadband connection recommended. To be valid for this offer, customer must purchase an Engin Voice Box, Internet Phone or Engin enabled router from any participating retail store. Not valid for online or phone sales. Offer not available to business customers. Customer must create an account, select the Home Plus plan and pay the first month's monthly service fee of \$19.95 to be valid to receive the 2 free months. 2 months free service will be given in months 2 and 3. Total value is \$39.90. Available on Engin services activated by 31st October 2007 unless withdrawn earlier. Fair Use policy applies. Cannot be used in conjunction with any other offer. Excludes calls to international mobiles and special services. Free countries on Home Plus include Canada, France, Germany, Ireland, Netherlands, Spain, UK and USA.

NB9W Wireless MyNet Gateway

NetComm

- All your broadband Internet needs in one device
- Features ADSL2+ modem, 4 port QoS router, 2x FXS (VoIP) ports, 1 x FXO line port for landline telephone backup and 11g (54Mbps) Wireless Access Point in one box!
- Layer 3 Quality of Service (QoS) router ensures high quality VoIP calls
- Web-based configuration for your choice of broadband and VoIP Service Providers



\$249 | T3138

IXUS75

Canon



7.1 MEGAPIXELS
3x OPTICAL ZOOM
2.5" 3.0" SCREEN
1111 MOVIE

With its cutting edge design and extra large LCD, the Digital IXUS75 is styled to stand out. The DIGIC III processor and advanced features like Face Detection Technology ensure equally stunning results.

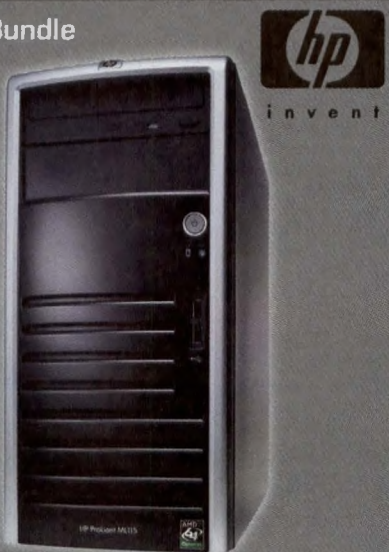
\$499 | U8906

\$50 PRICE DROP

ProLiant ML115 Small Business Server Bundle

Features, such as AMD Opteron and Athlon processors, DDR II ECC memory, PCI and PCI-Express slots, dual serial ports, four hard disk drive bays, and eight USB 2.0 ports deliver the off-the-shelf functionality with expandability for small businesses.

- AMD[®] Opteron[®] Processor 1210, 1.8GHz, 2MB Cache
- 1GB (2 x 512MB) DDR2 Memory
- 2 x 160GB SATA Hard Drive
- Integrated 4 Ports Serial ATA Controller with embedded RAID
- Embedded NC320i PCIe Gigabit NIC
- Warranty - 3 years parts, 1 year labour, 1 year on-site



\$1449 | U7946 | RENT \$16.25/wk*

SMALL AND MEDIUM BUSINESS SERVICES

Let the experts at Harris Technology do it for you

Do you wish you had an IT department to solve your technical headaches? Now even small businesses can afford to have one! Outsourcing technicians from Harris Technology is a smart way to keep your business operational at all times, ensuring ongoing maintenance and minimising your fixed costs.

Whether in-store or in your business, Harris Technology offers you a wide range of services to save you time and help boost your productivity.

Let us be your IT department.

N3G001W Wireless Router with 3G Card

The NetComm N3G001W 3G Wireless Router allows you to share your 3G service with any wireless enabled desktop or laptop computers. Using your 3G PCMCIA Card you can now set up a wireless network to share internet access in areas where previously unavailable. Remote offices can use a single 3G connection to create a wireless network that can be shared between all users without having to constantly swap the card between multiple computers.



\$229 | U9553

ReadyNAS NV+ 1TB Gigabit Desktop Network Storage

At last, there is a Network Attached Storage device for small businesses and home offices that allows you to quickly and easily add capacity or swap out drives without down time.

- Perfect NAS for Small Office and Home Office
- 4 x 250GB hot-swap SATA HDD, swap out drives on the fly without powering down the unit
- Hardware accelerated RAID (0,1,5 and X-RAID[™]) for better file transfer performance
- Bundled 5-Client EMC[®] Retrospect[®] backup and recovery software for Windows and Macintosh

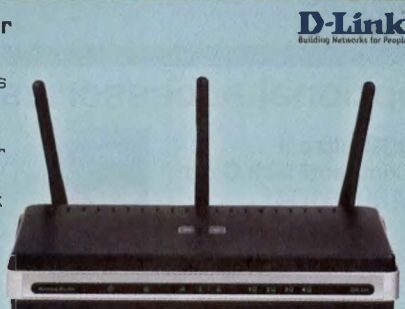


\$2119 | U8794 | RENT \$23.76/wk*

DIR-635 RangeBooster N 650 Wireless Router

A draft 802.11n compliant device that delivers real world performance of up to 650% faster than an 802.11g wireless connection (also faster than 100Mbps wired Ethernet). Create a secure wireless network to share photos, files, music, video, printers, and network storage throughout your home.

- QoS engine and draft 802.11n technology for total network performance
- Active Firewall and WPA2[™] to protect your network against outside intruders



\$246 | T9473

Server Installation - Microsoft Server 2003

- Physical Installation of New server
- Creation of up to 10 user accounts
- Configuration of Exchange email system, internet mail and creation of up to 10 mailboxes
- Configuration of Windows 2003 Backup Software (tape drive & tapes required)
- Configuration of user and group shared files
- Configure network services - DNS, DHCP, RRAS **
- Configuration of VPN for up to 5 users
- Configuration of Antivirus (supplied or new)
- Connection to network
- Configuration of up to 10 PCs to connect to server, access shared areas and email
- Transfer data (up to 5 Gb) from PC's to shared areas
- Configure Proxy Internet access to all users (Internet connection existing)

** DNS (domain Name Resolution), DHCP (Dynamic Host Configuration Protocol), RRAS (Remote VPN accounts)

\$810 | U5898

Health Check Service

- Assessment of back-up procedures
- Assessment of security through regular update and correct installation of AntiSpam, AntiSpyware, AntiVirus software on servers, workstations and email gateway
- Check firewall for Internet connection and presence of content filtering software for internet and email
- Server check event log for re-occurring problems, memory usage, hard drive free space, UPS backup for server
- Network check, i.e. cable patching and network switches, secured wireless access points (if in use)

\$280 | U5903

Computer Accessories

All your computer peripheral needs covered

V450 Laser Cordless Mouse for Notebooks



- Precision laser tracking
- Ergonomic design with soft rubber grips
- 2.4GHz digital cordless technology for strong connections and no interference
- Micro-receiver stores neatly inside mouse

SAVE \$20

\$69 | U0117



diNovo Media Desktop Bluetooth Laser



- Bluetooth MediaPad — long range Bluetooth remote commander combines a numeric pad, calculator and remote control
- LCD display
- Rechargeable MX Laser mouse

SAVE \$30

\$299 | T3582



Wireless Notebook Presenter Mouse 8000

Microsoft

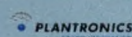
- Smoothly navigate through Microsoft Office, PowerPoint and other presentations from up to 9m away from the PC
- Use Media Remote for multimedia presentations and control digital entertainment



SAVE \$20

\$129 | U4249

Voyager Audio .910 VoIP Bluetooth Headset



- VoIP-optimised Bluetooth headset solution
- Seamless sharing between a mobile phone, PC or PDA
- Multi-point Voyager headset with WindSmart technology
- Plug and Play USB Bluetooth-Voice adapter
- Leading Softphone integration with Personacall software



\$129 | U0121

SAVE \$20

Laser Cordless Desktop MX3200



- New dynamic search helps you find anything, anywhere, anytime
- Sculpted laser mouse for superior comfort and precision
- Touch-sensitive zoom slider for enhanced speed and convenience

SAVE \$10

\$177 | U1804



Wired Lifecam NX-6000 Platinum

Microsoft

- Wide-angle lens with 71 degree field of view
- Automatic face tracking and Noise-reduction software
- Crystal-clear audio
- Built-in uni-directional Mic
- Retractable lens to prevent damage during travel



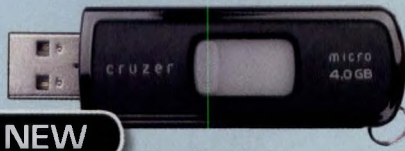
SAVE \$30

\$149 | U5011

Cruzer Micro U3 4GB ReadyBoost

SanDisk

- U3 smart™ technology gives you the ability to carry your files and your software on a secure USB drive
- Includes Skype™, to make voice and video calls from PC to PC anywhere in the world



NEW

\$79⁹⁹ | U8760

Cruzer Titanium 2GB ReadyBoost

SanDisk

- Rugged Liquidmetal® casing that is crush-resistant to over 2,000 lbs.
- U3 smart™ technology gives you the ability to carry your files and your software on a secure USB drive.



NEW

\$59⁹⁹ | U8761

For terms and conditions, see page back page for details.

DID YOU KNOW

Harris Technology has a large range of high capacity storage devices. Let us help you select the right solution for your business.

optional accessories

8GB Ultra II CompactFlash Card
\$199 | R1041



High Capacity 4GB SD Card & Reader
\$99 | U6287



1GB Extreme III CompactFlash Card
\$59.99 | U9415



NEW

One Touch III 80GB Mini Edition **Maxtor**

- Easy backup of your data with the Maxtor OneTouch button
- USB 2.0 and 1.1 compliant interface
- 5400RPM 8M Cache



\$30 PRICE DROP

\$99 | U6810

160GB Porsche Mobile USB 2.0 Hard Drive

LACIE

- USB 2.0 interface
- Slim, sturdy, heat-dissipating design
- Fan-free design
- Stack, rack-mount or stand upright on your desk
- Driver-free for Mac OSX/Windows 2000, Windows XP
- Kensington lock compatible



NEW LOW PRICE

\$179 | U8764

My Book Essentials 500GB **WD Western Digital**

- High-speed USB 2.0 data transfer
- Easy to set up, easy to use
- Simple add-on storage for your files, music, photos and movies
- Google Search Tool



\$269 | T9002

Basics 500GB External Hard Drive **Maxtor**

- Store your work, photos, songs, and digital videos safely and securely
- Ideal for the office and home PC with easy installation via USB cable
- Includes vertical stand



\$50 PRICE DROP

\$249 | U6197

8GB Pocket Disk Drive **shintaro**

- Slim design
- Lightweight and compact
- Low cost data storage
- Large 8gb capacity, store your DVD's on a flash drive
- Provides security zone software, which lets you partition the memory and specify a password to protect the data you want to keep private



HOT PRICE FOR 8GB

\$149 | U7845

Passport 250GB Portable Hard Drive **WD Western Digital**

- Hi-Speed USB 2.0
- 5400RPM - 2MB buffer
- Plug & play, inbuilt software loads directly from the drive
- Ultra-portable drive
- Powered by USB bus so no separate power supply needed



NEW

MASSIVE 250GB

\$279 | U9546

optional accessories

2GB SD With Micromate Reader
\$46.99 | U0098



2GB miniSD
\$39.99 | T6172



2GB Micro SD
\$39.99 | U3749

1GB Extreme III Secure Digital Card
\$49.95 | U9418



NEW

Desktop & Display

Great value Desktop and Display offers...

DYMO

LabelWriter 400 Turbo



- 300 dpi for super quality labels
- Up to 60mm wide labels
- 55 labels per minute print speed
- Automatic back-up of first label
- Label Release feature for simplified unloading of labels
- PC and Mac compatible

\$249 | U8564

* See page 47 for terms and conditions including RentSmart.

¹ Cashback offers valid for purchases from 01/08/07 until 30/09/2007. Visit hp.ht.com.au for full details.

² 30 day money back guarantee offer valid for purchases from 01/08/07 until 30/09/2007. Visit hp.ht.com.au for full details.

³ Bonus 2 year warranty by redemption from HP. Valid for purchase 01/08/07 to 31/10/07. Visit hp.ht.com.au for full terms & conditions.

⁴ Bonus installation & delivery by redemption from Harris Technology. Includes unpack of machine, install printer/scanner/copier/fax to local or network, install printer drivers to 2 PC's, configure scanning to 1 PC, fax capability to existing fax line, test copier function, provide 15min familiarisation with device & perform test prints. Valid for purchases from 01/08/07 to 31/08/07. Visit samsung.ht.com.au for more details.

OfficeJet 7410

- Print & Copy Speed: Up to 30ppm (mono)/up to 20ppm (colour)
- Print Resolution: Up to 1200 x 1200 dpi (mono) /up to 4800 x 1200 dpi (colour)
- Scan Resolution: 2400 x 2400 dpi
- Total Media Capacity: 400 sheets
- Memory: 16MB (expandable 96MB)
- Connection: USB, Ethernet 10 Base-T, IEEE 802.11b, IEEE
- Warranty: 1 year

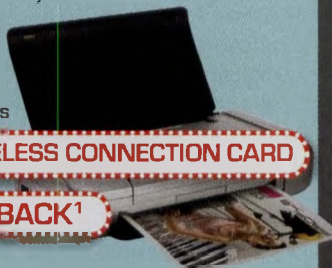
\$150 CASHBACK¹

\$549 | Q2905 | **\$399 AFTER CASHBACK**



Deskjet 460 CB Portable Printer

- Print Speed: up to 17ppm
- Print Resolution: 1200 x 1200 dpi
- Total Media Capacity: 50 sheets
- Memory: 32MB
- Connection: USB
- Monthly duty cycle: 500 pages



BONUS WIRELESS CONNECTION CARD

\$50 CASHBACK¹

\$399 | U6875 | **\$349 AFTER CASHBACK**

OfficeJet Pro K5400DTN

- Print speed: up to 36ppm mono/ 35ppm colour
- Print Resolution: 4800 dpi colour
- Duplex (dual sided) printing
- Total Media Capacity: 600 sheets
- PCL 3 support
- Extra paper tray
- Built in networking



\$100 CASHBACK¹

30 DAY MONEY BACK GUARANTEE²

\$379 | U7751 | **\$279 AFTER CASHBACK**

Colour LaserJet 2600N Printer

- Print Speed: up to 8ppm mono/8ppm colour
- Print Resolution: 600 x 600 dpi
- Total Media Capacity: 250 sheets
- Memory: 16MB
- Connection: Hi-Speed USB, Ethernet 10/100Base-TX
- Monthly Duty Cycle: 35,000 pages
- Warranty: 1 year



\$100 CASHBACK¹

\$529 | S2505 | **\$429 AFTER CASHBACK**

HL-5250DN

- Print Speed: up to 30ppm
- Print Resolution: 1200 x 1200 dpi
- Total Media Capacity: 300 Sheets
- Memory: 32MB
- Connection: USB / Ethernet
- Duplex mode for dual sided printouts
- Monthly duty cycle: 20,000 pages
- Warranty: 1 year



\$449 | T3555

Laserjet P2015 Series

- Printing at the speed of business for workteam productivity
- Get this printer—for the professional quality you require day in and day out
- Save hours with fast set-up, hassle-free use, and convenient supplies reordering
- Ideal for workteams of up to 10 users and demanding individuals in small, medium and enterprise companies who need a reliable, space-saving, black-and-white printer for fast, high-quality business printing

\$699

P2015N | U4728 | **RENT \$8.09/wk***

Also Available:

HP LaserJet P2015 | \$579 | U5652 | RENT \$6.70/wk*

HP LaserJet P2015D | \$699 | U6027 | RENT \$8.09/wk*

Also Available:

HP LaserJet P2015DN | \$799 | U6036 | RENT \$9.24/wk*

HP LaserJet P2015X | \$899 | U5828 | RENT \$10.40/wk*

BONUS 2 YEAR WARRANTY³



CLX-3160FN

Samsung's CLX-3160FN provides USB ports for you to instantly print various image files. The CLX-3160FN also features a USB Direct Scan feature and NO-NOIS technology.

- Printer/Copier/Scanner/Fax
- Print & Copy Speed: up to 16ppm
- Print Resolution: up to 2400 x 600 dpi
- Scan Resolution: 600 x 1200 dpi
- Standard Media Capacity: 150 sheets
- Connection: Hi-Speed USB, Ethernet 10 Base-T/100 Base-TX
- Warranty: 1 year onsite

\$1099 | U6220 | RENT \$12.71/wk*

SAMSUNG



BONUS DELIVERY⁴

BONUS INSTALLATION⁴

CLP-300N Colour Laser

SAMSUNG

- Print Speed: up to 16ppm mono A4/4ppm colour
- Print Resolution: 2400 x 600 dpi
- Total Media Capacity: 150 sheets
- Memory: 64MB
- Connection: USB, Ethernet
- Monthly Duty Cycle: 24,200 pages
- Warranty: 1 year on site



BONUS BLACK TONER

\$429 | U0104



CLX-2160n

SAMSUNG

- World's Smallest Colour Laser Multifunction Printer - designed to fit your desktop
- Scan & Save Instantly - scan to and print documents directly from your USB memory key
- Easy-to-use Toner - easy toner replacement system. No spills or waste

\$749

U8093 | RENT \$8.66/wk*

LaserJet 3055 All in One Printer

hp

- Printer/copier/scanner/fax
- Print speed: up to 18ppm
- Print Resolution: up to 1200 x 1200 dpi
- Scan resolution: 600 dpi
- Hi-Speed USB, Ethernet
- Warranty: 1 year



BONUS 2 YEAR WARRANTY³

\$749

T4390 | RENT \$8.66/wk*

Colour LaserJet 2840

hp

- Printer/Copier/Scanner/Fax
- 7-in-1 card reader
- Print speed: up to 19ppm mono/4ppm colour
- Print Resolution: up to 600 x 1200 dpi (mono)/ up to 600 x 600 dpi (colour)
- Scan Resolution: 1200 x 1200 dpi
- Connection: Hi-Speed USB, Ethernet
- Warranty: 1 year onsite
- Windows and Mac compatible

\$1399

S1217 | RENT \$15.69/wk*



HARRIS TECHNOLOGY SERVICES

INSTALLATION HEADACHES?

Let the experts at Harris Technology do it for you. Do you wish you had an IT department to solve your technical headaches? Now even small businesses can afford to have one! Outsourcing technicians from Harris Technology is a smart way to keep your business operational at any time, ensuring ongoing maintenance and minimising your fixed costs.

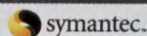
PRINTER INSTALLATION MULTIFUNCTION DEVICE

- Unpack one new multifunction printer/scanner/copier/fax
- Install new multifunction printer/scanner/copier/fax (local or network)
- Install printer drivers on up to 2 PCs
- Configure scanning to 1 PC
- Configure fax capability (existing fax line)
- Test copier function
- Provide 15mins familiarisation with device
- Perform test prints

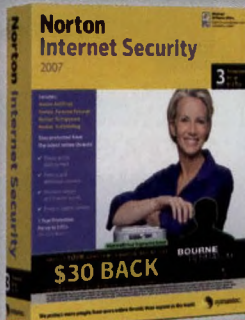
\$188[^] | SITE VISIT | U5899

The latest in software products...

Norton Internet Security 2007



- Blocks online identity theft
- Detects and eliminates spyware
- Removes viruses and Internet worms
- Protects against hackers
- Automatically detects and blocks viruses, spyware, and worms

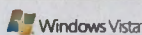


\$30 CASHBACK¹

\$99 | U0336

AFTER CASHBACK YOU PAY \$69

Windows Vista Ultimate



- Better protect your data against loss with Windows BitLocker Drive Encryption
- Protect against hardware failure with Windows Complete PC Backup and Restore
- Use Scheduled Backup to automatically backup your files
- Elegant Windows Aero desktop experience with glass-like menu bars, Windows Flip 3D and Live Thumbnails



Upgrade from previous editions of Windows XP and Windows 2000

\$688 FULL U4505

SAVE \$62

\$454 UPGRADE U4506

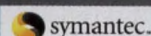
SAVE \$41

¹ Purchase a full version of Norton 360 3 User or Norton Internet Security 2007 3 User between 23/07/07 and 30/09/07 to be eligible to receive \$30 cashback from Symantec. See symantec.ht.com.au for more details. Postage charges may apply.

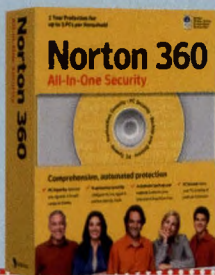
² Purchase a full version of Trend Micro PC-Cillin Internet Security 2007 between 01/08/07 and 31/08/07 to be eligible to receive bonus Noise Cancelling Headphones by redemption from Manacomm. See trendmicro.ht.com.au for more details.

For terms and conditions see back page for details.

Norton 360



- Defends your PC against a broad range of threats
- Safeguards against online identity theft
- Protects important files from loss
- Keeps your PC tuned up for peak performance
- Protects against the latest online threats



\$30 CASHBACK¹

\$129 | U6150

AFTER CASHBACK YOU PAY \$99

Microsoft Office Ultimate 2007

Microsoft Office Ultimate 2007 comprises of MS Word 2007, Excel 2007, PowerPoint 2007, Outlook 2007 with Business Contact Manager, Access 2007, Publisher 2007, InfoPath 2007, Groove 2007 & OneNote 2007.

Upgrade from Microsoft Works 6.0-10; Microsoft Works suite 2000-2006 or later; any 2000-2007 Microsoft Office program or suite; any Microsoft Office XP suite except Office XP Student and Teacher.



\$998 FULL U1833

SAVE \$177

\$828 UPGRADE U1834

SAVE \$111

Retail Starter Kit 2007/08

Quicken

If you are opening your store for the first time, or upgrading from a cash register, then Quicken's Retail Starter Kit is what you need. The Retail Starter Kit has been designed to make getting started easy.

Retail Starter Kit comes with QuickBooks Plus 2007/08, Retail Point of Sale 2007/08, plus **BONUS Thermal Printer, Scanner and Cash Drawer.**

- Manage customer accounts and laybys
- Inventory management
- Layered touch screen
- Label design and print software included
- Compatible with Microsoft® Windows 2000/XP/Vista™
- 12 months free* technical phone support
- 12 months free* software upgrades

\$919 | U8612

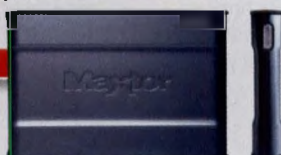
*See pack for details.



optional accessories

Maxtor One Touch III 80GB Mini Edition
\$99 | U6810

\$30 PRICE DROP



Shintaro 8GB Pocket Disk Drive USB 2.0
\$149 | U7845



HOT PRICE

AutoCAD LT 2008

autodesk

Streamline your day-to-day tasks with AutoCAD LT® 2008 software, the world's number-one-selling 2D drafting and detailing product. Daily work is simpler thanks to tools built with the drafter in mind. Work smarter and minimise workarounds as you refine your precision with annotation scaling and layer properties per viewport, text and table enhancements, and multiple leaders.



SAVE \$151

\$2049 | U5972

Microsoft Expression Web

Microsoft

Microsoft Expression Web gives you all the tools you'll need to produce high-quality, standards-based Web sites the way you want them. Take advantage of the best of dynamic Web site design, enabling you to design, develop, and maintain exceptional standards-based Web sites.

Upgrade from any previous version of Microsoft Office FrontPage.



SAVE \$30

\$489 | U6593

Microsoft Expression Web Upgrade | \$179 | U6237

optional accessories

DI-624S 108Mbps Wireless Storage Router
\$179 | T0648



Sony DSC75 8.1MP Digital Camera
\$699 | U9124



SanDisk 1GB Extreme III CompactFlash Card
\$59.95 | U9415



Adobe Creative Suite 3 Design Standard

Includes: InDesign CS3, Photoshop CS3, Illustrator CS3, Acrobat 8 Professional, Adobe Bridge CS3, Version Cue CS3, Adobe Device Central CS3, Adobe Stock Photos Acrobat Connect.

Upgrade from CS 1.0, 2.0 or 2.3 Std or Prem or upgrade from Design or Web bundle (does not upgrade from Studio)

\$1899 | FULL | U6351

\$649 | UPGRADE | U6389



Adobe Photoshop CS3

Adobe Photoshop CS3 software accelerates your path from imagination to imagery. Ideal for photographers, graphic designers, and web designers, the professional standard delivers new features such as automatic layer alignment and blending that enable advanced compositing.

\$1049 | FULL | U6866

\$329 | UPGRADE | U6425

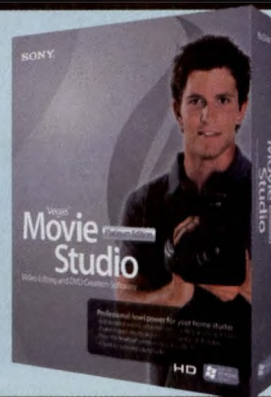


Sony Vegas™ Movie Studio Platinum 8

SONY

Ideal for producing high-quality movies, corporate videos, wedding DVDs, and more.

- New import and edit support for HD Sony AVCHD
- Import and edit DV, HDV, and other video formats
- 5.1 surround sound mixing and encoding



NEW

\$219 | U9445

1 - 31 August 2007

Treo 750



Telstra Dealer

NEXT NETWORK

BONUS BLUETOOTH HEADSET

\$0 UPFRONT

on a \$80 Telstra Business Phone Plan over 24 months¹

¹See page 8

CLX-3160FN Colour Laser Multifunction Printer

SAMSUNG

BONUS DELIVERY²

BONUS INSTALLATION²

1 YEAR ON-SITE WARRANTY

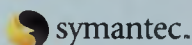
\$1099

U6220 | RENT \$12.71/wk*

²See page 13



Norton Internet Security 2007 3 PC



\$99 | U0336

AFTER CASHBACK YOU PAY \$69

³See page 14

\$30 CASHBACK³

Services



LET THE EXPERTS DO IT FOR YOU

Whether in-store or on-site, Harris Technology offers you a wide range of services to save your time and help boost your productivity. So let us do the job for you and start the financial year with peace of mind!

Visit services.ht.com.au for more details.

LOCATIONS | NSW - North Ryde 45 Epping Rd, **North Sydney** - G Floor Bayer Building 275 Alfred St, **Parramatta** 46 George St, **Alexandria** Unit 1/110 Botany Rd | **VIC - Hawthorn East** 612 Burwood Rd | **ACT - Fyshwick** 29-31 Townsville St | **QLD - Fortitude Valley** 356 St Pauls Terrace | **WA - Osborne Park** 426 Scarborough Beach Rd, **Cannington** 1359 Albany Hwy

STORE TRADING HOURS | Monday - Friday | North Ryde & Hawthorn 8am - 7pm, All other stores 8am - 6pm
Saturday | 9am - 5pm **Sunday** | 10am - 5pm (WA closed)

All purchases subject to Terms and Conditions & Returns Policy. No further discounts available. Limited Stock. No dealers. Delivery charges additional. Please call 1300 13 9999 or see delivery.ht.com.au for details. Offer available from 01/08/07 until 31/08/07. Not available in conjunction with any other offer. *The RentSmart figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see rentsmart.ht.com.au

Call 1300 13 9999 | Click ht.com.au | Visit our stores

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LINKSYS®

A Division of Cisco Systems, Inc.

I Want Wireless Everywhere!

Get maximum network performance when you use Wireless-N from Linksys

Connecting with family and friends is what networking is all about. The Linksys Wireless-N Router and notebook adapter has more range for the best networking throughout your home.

Enjoy the freedom of Wireless-N!

Also Available:

- **WAG325N** Wireless-N ADSL2 + Gateway
- **WRT300N** Wireless-N Broadband Router



Wireless-N Home Router
WRT150N

Please visit www.linksys.com.au or call
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CISCO

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EXCEED YOUR VISION



WITH EPSON YOU ONLY REPLACE THE COLOUR YOU USE.

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PER CARTRIDGE



Epson offers individual ink cartridges across its range of A4 inkjet printers. And from \$8.99* per cartridge, the value doesn't stop there. So why buy a printer that uses a multicolour cartridge when with Epson you only need to replace the colour you use.

Visit www.ink.epson.com.au for more information.

*RRP including gst. #Printer and cartridges for illustrative purposes only.

